SCIENTIARUM POLONORUM

ACTA

Oeconomia

18 (4) 2019

ACTA SCIENTIARUM POLONORUM

Oeconomia

Economics

Ekonomia

18 (4) 2019

October – December

The printed version of Acta Scientiarum Polonorum Oeconomia
is an initial version of the journal

List of Reviewers 2019

Piotr Adamczyk

Tadeusz Baczko

Ewa Bąk-Filipek

Beata Bieszek-Stolorz

Piotr Bórawski

Mirosława Braja

Bazyli Czyżewski

Anna Dąbrowska

Nina Drejerska

Ryta Dziemianowicz

Justyna Franc-Dąbrowska

Sylwia Frydrych

Marzena Ganc

Piotr Gołasa

Wojciech Grzegorczyk

Mariola Grzybowska-Brzezińska

Marta Guth

Aleksander Jakimowicz

Ewa Jaska

Marzena Kacprzak

Paweł Kaczmarczyk

Józef Kania

Ryszard Kata

Joanna Kisielińska

Sylwester Kozak

Jakub Kraciuk

Marzena Lemanowicz

Sławomir Lisek

Renata Lisowska

Magdalena Majchrzak

Renata Marks-Bielska

Anna Matuszczak

Ludwik Mazurkiewicz

Anna Nowacka

Jan Nowaczyk

Irena Ozimek

Agnieszka Parlińska

Andrzej Parzonko

Piotr Pietrzak

Aleksandra Płonka

Marian Podstawka

Iwona Pomianek

Ryszard Pukała

Bogusław Pytlik

Paulina Radzik

Joanna Rakowska

Tomasz Rokicki

Roman Sass

Łukasz Satoła

Janina Sawicka

Eulalia Skawińska

Teresa Słaby

Wioleta Sobczak

Marek Sobczyński

Ewa Stawicka

Dawid Szostek

Joanna Szwacka-Mokrzycka

Monika Utzig

Damian Walczak

Michał Wielechowski

Izabela Wielewska

Justyna Wiktorowicz

Tomasz Wojewodzic

Agnieszka Wojewódzka-Wiewiórska

Marcin Wysokiński

Jan Zawadka

Magdalena Zioło

Aleh Bakhur (Belarus)

Marta Barna (Ukraine)

Horst Brezinski (Germany)

Heorhii Cherevko (Ukraine)

Barbara Freytag-Leyer (Germany)

Agnieszka Gehringer (Germany)

Ana Kapaj (Albania)

Volodymyr Kolodiichuka (Ukraine)

Stanislava Kontsevaya (Russia)

Pavel Kotyza (Czech Republic)

Susanna Kytaieva (Ukraine)

Natalija Lepkova (Lithuania)

Ktut Silvanita Mangani (Indonesia)

Uliana Marchuk (Ukraine)

Dan Ophir (Israel)

Mykola Orlykovskyi (Ukraine)

Jose Pires (Spain)

Mufutau Popoola (Nigeria)

Vitaliy Rybchak (Ukraine)

Tamara Selisheva (Russia)

Lubos Smutka (Czech Republic)

Josu Takala (Finland)

Vojtech Tamas (Czech Republic)

Jonathan Tuthil (USA)

Harun Ucak (Turkey)

Srdan Vujicic (Croatia)

Simonida Vukadinovic (Serbia)

Oksana Zamora (Ukraine)

Jan Žukovskis (Lithuania)

From the Scientific Board

There has been the eighteenth year of the Acta Scientiarum Polonorum Oeconomia publishing. The Acta is the periodical including several thematic series with uniform graphics and similar format. The publication was set up by group of enthusiasts – employees of life sciences universities and has been published under the patronage of rectors of these universities. Constant involvement of academic society in increasing substantive and editorial level of the series, with efforts of the authors, the Programming Board and the Scientific Boards, has contributed to placing the Acta Scientiarum Polonorum (and our Oeconomia series) on the noticeable position in academic research society. Articles can be prepared in English with Polish title, abstract and keywords. Moreover, we publish latest issues in English only. The Scientific Board of the Oeconomia series, concerning the publication range, focuses its attention both on substantive content and precision of the form. The articles are revised in "double-blind review" process. Whole content of the Acta Scientiarum Polonorum Oeconomia is available in electronic version on the following websites acta_oeconomia.sggw.pl and www.oeconomia.actapol.net. We are glad to inform that Acta Scientiarum Polonorum Oeconomia are indexed within the AGRIS-FAO, EBSCO, SIGŻ, Copernicus Index, Central and Eastern European Online Library, AGRO, BazEkon, POL-index.

Please send send papers using the publishing system via the link below:

https://js.wne.sggw.pl

Yours sincerely

Janina Sawicka

*Chairperson of the Scientific Board
of the Acta Sci. Pol.
Oeconomia series*

SUGAR MARKET IN POLAND IN THE CONTEXT OF THE SUPPORT OF AGRICULTURAL POLICY. CURRENT SITUATION, TRENDS AND PROJECTIONS

Michał Borychowski✉, Anna Matuszczak, Sebastian Stępień

Poznań University of Economics and Business

ABSTRACT

The aim of the article is to present the situation of the sugar beet and sugar market in Poland in the context of changes to the Common Agricultural Policy of the European Union, and to present prospects for the development of these markets until 2030. The authors prove that, due to the significance of these markets for the whole agricultural sector, an intervention policy regarding the sugar beet and sugar markets is crucial, which is indicated by various positive economic and environmental effects connected with the functioning of this sector. The necessity for intervention stems also from the observed volatility of production, prices and incomes. The spatial scope of the research encompasses the whole area of Poland by applying a regional approach in some analyses (voivodeships) and a comparison with the Member States of the EU. The analyses cover a period of over 20 years – from 1997/1998 to 2018/2019 – as well as a projection for 2030.

Key words: sugar beet market, sugar market, agricultural policy, tendencies, projections

JEL codes: Q02, Q11, Q13, Q18

INTRODUCTION

Sugar is one of the most important food products. The sugar market constitutes an essential element of the whole agricultural sector and is linked to other agricultural markets. This claim can be substantiated, for example, by its increase in production and consumption. Its cultivation can be considered an alternative to typical food and feed crops (e.g. wheat, corn); sugar beet and sugar cane, however, have wider use and applications. For instance, they can be utilized for the purposes of food, feed and fibre production and as a source of bioenergy (bioethanol production). Sugar cane is considered to be one of the most important and effective sources of biomass for the production of bioethanol [International Sugar Organization 2019]. Besides that, there are some by-products of bioethanol production, such as sugar cane ashes (from combustion of biomass), which can be utilized as partial cement replacement in mortar and concrete, which in turn can contribute to the reduction of greenhouse gas [Jamora et al. 2019]. Its production appears to have certain positive environmental, economic and social effects. Hess et al. [2016] point out that expanding

Michał Borychowski https://orcid.org/0000-0001-6256-2680; Anna Matuszczak https://orcid.org/0000-0002-5045-5447; Sebastian Stępień https://orcid.org/0000-0001-9475-8418

✉ michal.borychowski@ue.poznan.pl

sugar cane production influences the environmental and social aspects depending on the situation of the sugar market (both in global and local contexts), quality of scheme, nature of the production system and farm management. Currently, over 100 countries produce sugar from sugar cane (80% of world sugar production) or from sugar beet. In the 2017/2018 season, the 10 largest sugar producers (India, Brazil, Thailand, China, the United States, Mexico, Russia, Pakistan, France and Australia) accounted for almost 70% of global supply [International Sugar Organization 2019, Ruggeri and Corsi 2019]. The European Union is also a large producer of sugar, with France, Germany and Poland in the first three places, followed by Great Britain and the Netherlands [Szajner 2019].

The aim of this article is to identify the changes occurring on the sugar beet and sugar market in Poland, one of the largest producers of this commodity in the EU and in the world. Tendencies regarding the number of plantations, cultivated areas, production and prices are presented. These changes will be placed in the context of reorienting the support policy within the Common Agricultural Policy. Finally, a projection of the development of the sugar beet and sugar market in Poland until 2030 will be presented. The authors hypothesize that the functioning of the sector is closely related to the CAP; the support mechanisms and their future state is determined by the amount of budget expenditures for this purpose. The topic is important for assessing potential development opportunities for the sugar sector in Poland. At the same time, knowledge of agricultural policy mechanisms allows us to estimate the impact of this policy on production profitability. An added value is the analysis of the market in Poland vis-a-vis the EU and the world situation. The authors' contribution is the presentation of forecasts and projections for basic market aggregates in Poland, also by region (with voivodships specified) until 2030.

MATERIAL AND RESEARCH METHODS

The paper reviews the literature and secondary data from Statistics Poland (Główny Urząd Statystyczny), Ministry of Agriculture and Rural Development (Ministerstwo Rolnictwa i Rozwoju Regionalnego), National Association of Sugar Beet Growers (Krajowy Związek Plantatorów Buraka Cukrowego), the European Commission and the International Sugar Organization. These sources of data were used to describe trends and to analyse time series (dynamics measurement), evaluate changes in the support policy and to present the projection of the market situation. The perspectives presented in the article regarding sugar beet cultivation and the sugar market in Poland devise a scenario for 2030, with the assumption that there will be no significant changes related to the support for this sector under the CAP and demand and price shocks. They are based on the reference scenario under the CAPRI partial equilibrium model[1].

SUGAR BEET AND SUGAR MARKET IN POLAND

Table 1 presents basic data about the sugar beet and sugar market in Poland in the period form 1997/1998 to 2018/2019. In the first three indicated seasons, the number of sugar beet growers was relatively high: 160–170 thousand. However, it quickly decreased to approx. 100 thousand, and in the following years it continued to decrease. In the 2018/2019 season, about 33 thousand agricultural holdings cultivated sugar beet and in the last eight periods this number was relatively stable, while in the first years after Poland's accession to the EU, the number of growers decreased significantly each year (on average by a few percent).

In the period form 1997/1998 to 2008/2009, decreasing tendencies in the cultivated area for sugar beet can be observed (from 310 thous. to 176 thous. ha).

---

[1] The Common Agricultural Policy Regionalised Impact Modelling System is a model widely used by the European Commission (Joint Research Centre). It is an ex ante impact assessment tool for agricultural and international trade policies, with a particular focus on the European Union, based on a 30-year baseline period (1984–2013). Its core consists of two interlinked modules: a supply module comprising around 280 regional aggregated programming models covering EU-27, Norway and the Western Balkans at NUTS 2 level, and a market module, a global multi-commodity model for around 50 agricultural commodities, which together allow a wide range of economic and environmental indicators to be calculated.

Table 1. Sugar beet and sugar market in Poland – basic data

Period	Number of growers (thous.)	Cultivated area (thous. ha)	Sugar beet yield		Sugar beet production		Sugar production		Year	Sugar beet purchase prices (PLN·t⁻¹)	Price gap
			t·ha⁻¹	dynamics (y/y) (%)	thous. t	dynamics (y/y) (%)	thous. t	dynamics (y/y) (%)			
1997/98	170	419.0	37.5	–	15 723	–	2 086	–	1997	94.9	95.8
1998/99	160	380.0	39.5	105.3	15 000	95.4	2 091	100.2	1998	96.6	91.4
1999/00	160	340.0	40	101.3	13 600	90.7	1 806	86.4	1999	99.8	91.5
2000/01	107	310.0	42.2	105.5	13 083	96.2	2 013	111.5	2000	101.9	103
2001/02	101	300.0	36	85.3	10 800	82.5	1 520	75.5	2001	111.2	97.5
2002/03	96	300.0	46.9	130.3	14 057	130.2	2 018	132.8	2002	112.1	90.9
2003/04	86	290.0	40.7	86.8	11 800	83.9	1 930	95.6	2003	124.2	97.5
2004/05	76	280.0	45	110.6	12 600	106.8	2 003	103.8	2004	187	102.6
2005/06	71	270.0	45	100.0	12 150	96.4	2 068	103.2	2005	175.3	96
2006/07	63	236.0	48.4	107.6	11 471	94.4	1 723	83.3	2006	128.8	102
2007/08	59	220.0	58.4	120.7	12 848	112	1 942	112.7	2007	108.3	107.7
2008/09	41	176.4	48.4	82.9	8 542	66.5	1 298	66.8	2008	103.7	91
2009/10	40	191.2	56.7	117.1	10 852	127	1 606	123.7	2009	115.7	96
2010/11	38	195.6	50.9	89.8	9 960	91.8	1 433	89.2	2010	113.1	110.1
2011/12	36	196.3	59.1	116.1	11 606	116.5	1 881	131.2	2011	144	108.3
2012/13	36	192.9	63.6	107.6	12 276	105.8	1 895	100.7	2012	137.2	98.3
2013/14	36	184.8	60.8	95.6	11 233	91.5	1 778	93.9	2013	148.7	99.1
2014/15	35	192.0	70.23	115.5	13 485	120.0	2 046	115.1	2014	125.9	94.8
2015/16	35	171.4	54.6	77.7	9 358	69.4	1 465	71.6	2015	119.5	97.3
2016/17	34	203.1	66.53	121.8	13 512	144.4	2 084	142.3	2016	116.6	99
2017/18	34	230.8	68.1	102.4	15 722	116.4	2 313	111.0	2017	95.6	110
2018/19	33	239.4	59.7	87.7	14 302	91.0	2 191	94.7	2018	105.3	94.4

Price gap – index of price relation ratio of sold agricultural products to purchased goods and services by farms.

Data on purchase prices of sugar beets and price gap are presented in calendar years (not in seasons).

Source: Own elaboration based on: Szajner [2005, 2012, 2019], GUS [2014, 2017, 2018, 2019], Krajowy Związek Plantatorów Buraka Cukrowego [2019b].

In further seasons it remained stable at a level of approx. 190 thousand ha, and after 2016 it started to grow significantly (annual average increase of approx. 12%), which gave the area under cultivation nearly 240 thousand ha in 2018/2019. These two processes were accompanied by an increase in sugar beet yields, which is positive. In the whole period being analysed, the increase in sugar beet yields was on average about 2.24% annually. Although the coefficient of variation itself oscillated around 20%, the increase in yields was characterised by exceptionally high instability and significant year-to-year fluctuations (mainly due to changing weather conditions). Such tendencies are difficult to recognise, however, in the case of sugar beet production.

In the seasons for 1997/1998 to 2008/2009, beet production decreased annually on average by more than 5%, which was mainly due to a decrease in the cultivated area. These decreases were not compensated by the growth of yields (which was slower). In subsequent years, as in the case of harvests, there were significant fluctuations in the production of sugar beet; however, with a higher rate of average variability, year-over-year changes reached even above 40%.

In 2018/2019, 14.3 million t of sugar beet were produced in Poland, which is 1.4 million t (9%) less than in the previous year, but by 800 thousand t more than in the 2016/2017 season. With a relatively stable cultivation area, changes in yields cause changes in the volume of sugar beet production. In recent years, there was a significantly higher convergence of these changes (a kind of synchronisation of variability) and growing yields contributed to an increase in sugar beet production. On the other hand, unstable weather conditions increased fluctuations [Krajowy Związek Plantatorów Buraka Cukrowego 2019a]. In turn, these fluctuations determine the production of sugar, which is strongly correlated with beet production. As a result, one can observe an increasingly clear synchronization of production cycles.

Sugar beet purchase prices also have strong fluctuations. As Pop et al. [2013] claim, historically, the sugar market has been one of the most volatile agricultural markets, challenging both market participants and policymakers to deal with this instability. In the analysed period, prices increased eight times and decreased tenfold on a year by year basis. The lowest price was observed in 2017 (at the level of PLN 95.6 per 1 t), and the highest price in 2004 (PLN 187 per 1 t). Purchase prices of sugar beet in 2018 were similar to those in 2000, 2007, 2008, and much lower than in 2011–2014. While decreasingly low sugar prices contribute to a decrease in profitability of the entire sugar industry, decreasing prices of sugar beet influence the profitability of production for farmers, which is confirmed by the "price gap" (Table 1). Values lower than 100 indicate an unfavourable situation from the point of view of production profitability in agriculture.

COMMON AGRICULTURAL POLICY INSTRUMENTS FOR THE SUGAR MARKET – IMPACT ASSESSMENT

More than 50 years ago, the sugar market in the EU became regulated, and for nearly 40 years it operated in an unchanged form. However, over time it became apparent that there were structural problems in this sector related to the creation of market surpluses, high intervention costs and low international competitiveness, all stemming from high sugar prices. On the

other hand, export subsidies contributed to the reduction of prices globally, which had a negative impact on the development of agriculture in less developed countries. As a result, in 2005 under pressure from the World Trade Organization, the EU undertook to change the regulation of the sector [World Trade Organization 2005]. In 2006, the first major reform of the sugar market in the European Union was carried out to prepare the EU sugar market for complete liberalisation of the international trade exchange and to improve the competitiveness of the EU sugar market [Council Regulation (EC) 318/2006]. As a result, a number of instruments were introduced, which were to be maintained until the end of September 2015. These were [European Commission 2014]: production quotas (limits of sugar production per country); administrative prices (purchase minimum price, reference price for white sugar, reference price for raw sugar), gradually reduced during the reform period; separate "sugar payment" (in Poland and eight other countries) or support for beet production included in direct payments; export of surplus production in accordance with WTO limits and trade instruments. A special restructuring fund was also set up for enterprises reducing production to compensate for the resulting losses. Restructuring aid measures were financed by those sugar producers who ultimately benefited from the restructuring process.

The measurable effect of the 2006 reform was an almost complete reduction of export subsidies and storage aid. Moreover, conclusions of a study by Aragrande et al. [2017] indicate that vertical price transmission asymmetries still existed, which in turn contributed to increased sugar sector concentration in the most competitive regions. As a result, Bulgaria, Ireland, Latvia, Portugal, and Slovenia ceased sugar production in the first years, while Greece, Spain, Italy and Slovakia significantly reduced their production. The negative consequences of the reform were also felt by Poland, where by the end of the 2009/2010 marketing year, 38 out of 56 sugar factories were closed [Cieślukowski and Mutascu 2018]. In the entire EU, the number of sugar beet growers has significantly decreased.

The changes similarly affected acreage and sugar production (in the first two years of the reform). With an increase in the average size of sugar beet farms, by

2016 the EU became a net sugar importer [Ministerstwo Rolnictwa i Rozwoju Regionalnego 2011]. Prices of sugar beet initially fell. From the mid-2010s, they began to rise, and then in 2013 they began to decline again [European Commission 2019a]. In addition, the adopted reference price in 2009–2018 was below the market price, so there were no reasons to launch an intervention – private storage. On the other hand, 11 years after the reform (in 2017), sugar prices on the EU market approached the level of world prices and prices of sugar imported to the EU. As a consequence, the European Union has become a net exporter. In the 2018/2019 season, foreign sales amounted to 3.25 million t, with 2.43 million t of import (in white sugar equivalent). Thus, it was possible to abolish existing intervention mechanisms.

The solutions implemented as part of the 2006 sugar market reform were not intended to be permanent, and in the next couple of years the market was expected to move away from quotas, minimum prices and production payments. Particularly in the case of the first of these instruments, changes were justified. The European sugar production quota system was extremely concentrated and dominated by several major players. In this regard, a great concentration of quota sugar production capacities was evident, which considerably eliminated competition in this sector [Rezbova and Maitah 2015]. Ultimately, the decision to withdraw the quotas was taken by the European Parliament and EU countries as part of the CAP reform carried out in 2013, and on 1 November 2017, the decision came into effect. At the same time, some liberalising changes in foreign trade regulations were adopted. However, some instruments are left under the CAP 'safety net' in case of a major crisis in the sector related to a sharp rise or fall in market prices (including import duties, the possibility of private storage, and the mobilization of emergency measures) [Wnorowski 2018].

Sugar beet producers can still get support under direct payments (this form applies to all agricultural producers) and additional support under voluntary complementary payments for specific sectors (which was also possible before the 2017 reform). Eleven Member States, including Poland, chose this form of assistance. The annual allocation for this purpose at the EU level for 2019 was EUR 182.5 million, which represented 4.3% of the total allocation under voluntary complementary payments (EUR 173.4 million is planned for 2020) and 0.4% of the total envelope for direct payments. The area covered by this support reaches almost 510 thous. ha, and the EU-28 average payment per farm is EUR 359 per 1 ha (it is expected to be 341 in 2020). The highest share in the area covered by support is found in Poland – 211.3 thous. ha, which gives 42%. The envelope of money is also the highest – EUR 82 million, which constitutes an average payment of EUR 388 per 1 ha (for 2020 respectively EUR 74.4 million and EUR 352 per 1 ha, assuming an unchanged area of ha) [European Commission 2019b].

As forecasted earlier, the release of sugar quotas in October 2017 contributed to a significant drop in prices on the EU market. In mid-2019, the average price in the EU was around EUR 320 per 1 t, compared to almost EUR 500 in mid-2017. It was the lowest level since the onset of the European Commission's price reporting system, i.e. since July 2006. In just two years, there was a decline of almost 35%. The price reduction applied to all member countries, although there is still considerable regional differentiation. The lowest prices (around EUR 10 per 1 t lower than the EU average) are recorded in North-Western Europe. In Central and Northern Europe, including Poland, the prices are similar to the EU average. The highest prices (above EUR 60 per 1 t higher than average) occur in regions of southern Europe [Committee for the Common Organisation of Agricultural Markets 2019].

This price differentiation can be important when considering further development of the sugar sector. A further concentration of production is expected in the most price-competitive regions, i.e. in Western Europe and some Central European countries (e.g. in Poland due to relatively lower processing costs, including the costs of labour) [European Commission 2019a]. Maitah et al. [2016] point out that the future state of sugar companies in the EU, including Poland, will largely be determined by the activities of big-scale German, French, Dutch or Belgium concerns/alliances that control supply in many European countries. According to the analyses of the EC, Poland is listed as a country with competitive sugar beet production conditions. The lack of restrictions on production can lead to a better use of Poland's

production potential, which ranks third in the EU in terms of sugar production (after France and Germany). The competitiveness of the Polish sugar sector is indicated by, for example, a clearly positive balance of foreign trade (more than EUR 150 thous. in the first eight months of 2019) [Szarejko-Pater and Pachnicki 2019].

On the other hand, in the second year after the reform, i.e. in the 2018/2019 marketing year, sugar production in Poland amounted to a significantly lower level than in the previous period, despite the increase in acreage (to 240 thous. ha in 2019 against 203 thous. ha in 2016/2017 and 171 thous. ha in 2015/2016) [Krajowy Związek Plantatorów Buraka Cukrowego 2019b]. In the period from September 2018 to June 2019, the country produced a total of 2.1 million t of sugar, 8% less than in the same period of 2017/2018 [Krajowy Ośrodek Wsparcia Rolnictwa 2019]. A decrease in prices recorded after the abolition of the quota also negatively affected the results of sugar companies, which recorded profits several times lower than a year earlier.

PROJECTION OF THE DEVELOPMENT OF THE SUGAR BEET AND SUGAR MARKET IN POLAND IN 2030

According to the CAPRI model, it is expected that in 2030 the cultivated area will increase (250.7 thous. ha) as compared to 2019 (239.4 thous. ha), which confirms the growing trend over the last 10 years. The regions where the largest cultivated areas will be located, as at present, will be voivodeships: the Wielkopolskie, the Kujawsko-Pomorskie and the Lubelskie. It is also expected that the yields will be fairly stable at the level of 61.3 t·ha^{-1}. In this case relatively large differences between regions can be observed – the highest yields will be harvested by producers from the Dolnośląskie Voivodeship (69.6 t·ha^{-1}), the Kujawsko-Pomorskie Voivodeship (68.4 t·ha^{-1}) and the Opolskie Voivodeship (67.5 t·ha^{-1}), while the lowest from the Mazowieckie Voivodeship (50.3 t·ha^{-1}), the Podkarpackie Voivodeship (52.7 t·ha^{-1}), the Śląskie Voivodeship (54 t·ha^{-1}) and the Małopolskie Voivodeship (54.6 t·ha^{-1}). According to this forecast, a stagnation of the sugar beet

production trend, which has been growing for over a dozen years, will occur. However, in 2030 Poland will maintain its leading position as a producer of these crops in the EU and on the international arena, with an estimated supply in the country at the level of 15,366 million. The volume of production that will be supplied by producers from particular voivodships will be primarily correlated with the area of crops (Table 2).

As mentioned above, the reference scenario assumes that the mechanisms of intervention will remain unchanged after the year 2020, especially in the area of income support for sugar beet producers. Thus, it is estimated that the total payment in 2030 will amount to EUR 494.4 per 1 ha, while the payment related to sugar beet production will amount to EUR 293.54 per 1 ha, i.e. approx. PLN 1,260 PLN (Table 3). The probability of such a scenario occurring seems to be high, as from 2015 this rate has been steadily decreasing. In 2019, the amount of the payment related to sugar beet production came to PLN 1,524.18 per 1 ha (in accordance with the Regulation of the Ministry of Agriculture and Rural Development on the rates of payments related to the area of crops for a given year). It should be noted that in 2015 this rate was still at the level of PLN 2,138.45, but in 2018 it fell to PLN 1,495.63. At this point, a question arises whether it would not be advisable to consider compensation for the reduction of this support with a higher transfer of national funds. It is anticipated that in 2030 national support will constitute only 4.7% of the total pool of subsidies (EUR 6.05 million from the total amount of EUR 126.55 million).

The projection showed sugar beet prices estimated at EUR 241 per 1 t in 2030. The projected sugar production in Poland in 2030 is 2,626 million t, which is slightly higher than the forecasts for the 2019/2020 season (from 2.27 million to 2.38 million t). It should be noted, however, that the production in Poland is higher than the demand on the internal market, amounting to 1.72 million t, making it necessary to export some of the yields. Moreover, there is a permanent global surplus of production, which in some periods slightly decreases as a result of growing demand and/or lower world production.

Table 2. Expected basic volumes related to sugar beet production in Poland in 2030

Specification	Crop area (thous. ha)	Productivity/ /yield (t·ha⁻¹)	Supply (thous. ha)	Crops share in arable land (%)	Costs of fertilizers (EUR·ha⁻¹)	Voluntary coupled payments (million EUR)
Poland	250.66	61.3	15 365.71	2.05	903.71	82.04
Łódzkie	6.61	55.6	367.25	0.74	787.46	2.17
Mazowieckie	18.38	50.3	924.97	1.15	824.79	6.04
Małopolskie	2.47	54.6	134.8	0.52	770.64	0.81
Śląskie	2.65	54	143.34	0.78	707.44	0.87
Lubelskie	44.21	60	2 654.61	3.58	936.55	14.54
Podkarpackie	7.55	52.7	397.87	1.5	753.13	2.49
Świętokrzyskie	7.5	59.3	444.82	1.62	816.15	2.46
Podlaskie	0.43	56.9	24.38	0.06	903.51	0.15
Wielkopolskie	51.18	59.8	3 060.12	3.6	935.18	16.82
Zachodniopomorskie	19.7	61.4	1 210.4	2.58	846.94	6.47
Lubuskie	2.59	59.6	154.16	0.77	827.99	0.85
Dolnośląskie	17.45	69.6	1 215.4	2.17	929.84	5.73
Opolskie	12.74	67.5	859.69	2.8	828.08	4.19
Kujawsko-Pomorskie	40.8	68.4	2 792.09	4.43	1 015.42	13.42
Warmińsko-Mazurskie	3.96	64.4	254.99	0.54	952.03	1.30
Pomorskie	12.44	58.4	726.83	2.01	812.85	4.09

Source: Authors' own calculations based on the reference CAPRI scenario.

Table 3. Expected income support for sugar beet producers in Poland in 2030 (EUR·ha⁻¹)

Specification	Total sum	Total payments, Pillar I	Single Area Payment	Voluntary coupled payments	Greening	Total payments, Pillar II	LFA payments	National payments
Sugar beet	494.17	460.52	89.8	293.54	58.94	20.58	20.58	13.07

Source: Author's own calculations based on the reference CAPRI scenario.

The profitability of the production of sugar beet is strongly dependent on voluntary payments related to its production: estimates indicate that these payments constitute up to 80% of the income obtained per hectare of crops. In order to test the possible consequences of abandoning this payment after 2020, a scenario was drawn up under the CAP, assuming: liquidation of voluntary payments linked to production, convergence of the single area payment, maintenance of payments linked to greening. On this basis, we can conclude that sugar beet production in Poland after the abolition of voluntary support is no longer profitable. It is estimated that producers will generate a loss. It will also result in a decrease of nearly 1/3 of the area under sugar beet cultivation (to 175.7 thous. ha). With a relatively stable yield level, the supply will fall by 1/3, to the level of 10,819 million t. The abolition of subsidies may also lead to a change in the structure of crops – a decrease in the share of sugar beet to 1.44% in total arable land. It should be emphasised that in the structure of crops in Poland, cereals already clearly dominate, occupying about 70% of the cultivated area. Interestingly, the estimated prices would not change in relation to the reference scenario, while the sum of payments received in total per 1 ha of crops would be only EUR 230.19,

which would not allow producers to compensate for the incurred loss.

SUMMARY

The data presented in the study clearly shows that the EU and national sugar and sugar beet market is subject to constant changes. These changes are the result of supply and demand adjustment processes and international relations. The role of the intervention policy is also essential. The reforms of the CAP carried out in the last dozen or so years have led to structural changes in the sector and a separation between the EU regions with a high concentration of production and those in which production is disappearing. Poland belongs to the first group of countries, with a high development potential. In the future, however, the scale of this development will depend on the continued support under the mechanisms of the CAP, depending mainly on payments related to production. In such a scenario, one may expect an increase in the area of crops, stabilisation of yields and supply at a relatively high level, which will allow Poland to maintain the position of one of the leaders on the international market. In the scenario without payments, profitability will decrease significantly, leading to a decrease in sowing area and production volume.

Finally, an important matter that should be addressed during the discussion on the future of sugar beet cultivation are the economic and environmental issues. The 2030 scenario shows that the production of bioethanol from sugar is to constitute 22.3% of the total, i.e. 76.5 thousand t, which is undoubtedly an important item. It can even be said that the development of the bioethanol industry, which generates an additional source of demand for sugar, is a factor favouring the development of the sugar market. What is more, higher demand for bioethanol in transport may contribute to the improvement of financial results for sugar producers. On the other hand, the use of bioethanol from sugar beet instead of gasoline can also achieve real savings in carbon dioxide emissions to the atmosphere. As the Directive 2009/28/EC 2009 indicates, typical and standard greenhouse gas emission reductions are respectively: 61% and 52%, so their use in the biofuel industry may be as beneficial as that of grains (wheat, corn). Moreover, the cultivation of

sugar beet in crop rotations is beneficial, as it leaves crops in good agricultural condition and weeds out due to numerous maintenance treatments [Gniewowska and Maziarek 2015]. The production of this rootstock plant favours greater crop diversification and prevents the further domination of cereals in their structure and the formation of crop monocultures. Therefore, the continuation of financial support for sugar beet producers after 2020 will facilitate the accomplishment of two important objectives: firstly, the maintenance of profitability of production and, as a result, the preservation of agricultural income; secondly, the broadly understood protection of the climate and the environment, which in turn justifies support for producers.

REFERENCES

Aragrande, M., Bruni, M., Loi, A., Esposti, R. (2017). The effect of EU 2006 sugar regime reform on vertical price transmission. Agricultural and Food Economics, 5 (18), https://doi.org/10.1186/s40100-017-0087-8

Cieślukowski, M., Mutascu, M. (2018). Fiscal consequences of the abolition of sugar levies. Economics and Business Review, 4 (18), 4, 83–96.

Committee for the Common Organisation of Agricultural Markets (2019). Sugar Price Reporting. Brussels.

Council Regulation (EC) No 318/2006 of 20 February 2006 on the common organisation of the markets in the sugar sector. OJ L 58/1 of 28.02.2006.

Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC (Text with EEA relevance). OJ L 140/16 of 05.06.2009.

European Commission (2014). Sugar Price Report, Agri C4. Committee for the Common Organisation of Agricultural Market, Brussels.

European Commission (2019a). Sugar. Brussels. Retrieved from https://ec.europa.eu/info/food-farming-fisheries/plants-and-plant-products/plant-products/sugar_en [accessed: 17.11.2019].

European Commission (2019b). Voluntary coupled support. Review by the Member States of their support decisions applicable as from claim year 2019. Ref. Ares(2019)5742211. Brussels.

Gniewowska, E., Maziarek, A. (2015). Prawidłowa agrotechnika buraków cukrowych. Opolski Ośrodek Doradztwa Rolniczego w Łosiowie, Łosiów.

GUS (2014). Polska 1989–2014. Warszawa.

GUS (2017). Rolnictwo 2016. Warszawa.

GUS (2018). Rolnictwo 2017. Warszawa.

GUS (2019). Rolnictwo 2018. Warszawa.

Hess, T.M., Sumberg, J., Biggs, T., Georgescu, M., Haro-Monteagudo, D., Jewitt, G., Ozdogan, M., Marshall, M., Thenkabail, P., Daccache, A., Marin, F., Knox, J.W. (2016). A sweet deal? Sugarcane, water and agricultural transformation in Sub-Saharan Africa. Global Environmental Change, 39, 181–194.

International Sugar Organization (2019). The Sugar Market. London. Retrieved from https://www.isosugar.org/sugarsector/sugar [accessed: 17.11.2019].

Jamora, J.B., Gudia, S.E.L., Go, A.W., Giduquio, M.B., Orilla, J.W.A., Loretero, M.E. (2019). Potential reduction of greenhouse gas emission through the use of sugarcane ash in cement-based industries: A case in the Philippines. Journal of Cleaner Production, 239.

Krajowy Ośrodek Wsparcia Rolnictwa (2019). Informacja o sytuacji na rynku cukru. Biuro Analiz i Strategii KOWR, Warszawa.

Krajowy Związek Plantatorów Buraka Cukrowego (2019a). Wyniki kampanii 2018/19. Retrieved from https://kzpbc.com.pl/informacje,2,pl,news,2,1,112.html [accessed: 17.11.2019].

Krajowy Związek Plantatorów Buraka Cukrowego (2019b). Wyniki produkcyjne w Polsce. Retrieved from https://kzpbc.com.pl/wyniki-produkcyjne-w-polsce,50,pl.html [accessed: 04.11.2019].

Maitah, M., Rezbova, H., Smutka, L., Tomsik, K. (2017). European Sugar Production and its Control in the World Market. Sugar Tech, 18 (3), 236–241, https://doi.org/10.1007/s12355-016-0439-9

Ministerstwo Rolnictwa i Rozwoju Regionalnego (2011). Etapy reformy rynku cukru. Warszawa.

Pop, L.N., Rovinaru, M., Rovinaru, F. (2013). The challenges of sugar market: an assessment from the price volatility perspective and its implications for Romania. Procedia Economics and Finance, 5, 605––614.

Rezbova, H., Maitah, M. (2015). EU Quota Sugar Market Concentration – the Main Drivers of EU Sugar Market. Agris on-line Papers in Economics and Informatics, 7 (4), 131–142, https://doi.org/10.7160/aol.2015.070413

Rozporządzenie Ministra Rolnictwa i Rozwoju Wsi z dnia 7 października 2019 r. w sprawie stawek płatności związanych do powierzchni upraw za 2019 r. Dz.U. 2019, poz. 1970.

Ruggeri, G., Corsi, S. (2019). An analysis of the Fairtrade cane sugar small producer organizations network. Journal of Cleaner Production, 240, https://doi.org/10.1016/j.jclepro.2019.118191

Szajner, P. (Ed.) (2005). Rynek cukru – stan i perspektywy. Analizy Rynkowe, 28

Szajner, P. (Ed.) (2012). Rynek cukru – stan i perspektywy. Analizy Rynkowe, 39.

Szajner, P. (Ed.) (2019). Rynek cukru – stan i perspektywy. Analizy Rynkowe, 46.

Szarejko-Pater, A., Pachnicki, A. (2019). Rynek cukru, 9. Ministerstwo Rolnictwa i Rozwoju Regionalnego, Warszawa.

Wnorowski, H. (2018). Biznes cukrowniczy w Unii Europejskiej po zniesieniu kwot produkcyjnych – przypadek Polski. International Economics, 23, 103–116, http://dx.doi.org/10.18778/2082-4440.23.03

World Trade Organization (2005). European Communities – Export Subsidies on Sugar. AB-2005-2. Report of the Appellate Body.

RYNEK CUKRU W POLSCE W KONTEKŚCIE WSPARCIA POLITYKI ROLNEJ. STAN AKTUALNY, TRENDY, PROJEKCJE

STRESZCZENIE

Celem artykułu jest zaprezentowanie sytuacji na rynku buraka cukrowego i rynku cukru w Polsce w warunkach zmian wspólnej polityki rolnej Unii Europejskiej i określenie przewidywanego rozwoju do 2030 roku. Autorzy dowodzą, że ze względu na wagę sektora w całym rolnictwie polityka interwencyjna w tym obszarze jest kluczowa, na co wskazują pozytywne ekonomiczne i środowiskowe efekty związane z funkcjonowaniem rynku. Konieczność wsparcia wynika także z obserwowanej zmienności produkcji, cen i dochodów. Zakres przestrzenny badań obejmuje Polskę wraz z odniesieniem do analizy regionalnej i porównaniem do innych krajów UE. Zakres czasowy to okres ponad 20 lat – od 1997/1998 do 2018/2019, a dla projekcji 2030 rok.

Słowa kluczowe: rynek buraka cukrowego, rynek cukru, polityka rolna, tendencje, projekcje

PECULIARITIES AND RESULTS OF INNOVATIVE ACTIVITY OF AGRICULTURAL ENTERPRISES IN UKRAINE

Heorhii Cherevko[1]✉, Oksana Smulka[2]

[1] University of Rzeszów
[2] Lviv National Agrarian University

ABSTRACT

The article considers the essence of innovative activity and presents results of the study of innovative processes, conducted by agricultural enterprises of Ukraine. To detect peculiarities of those processes, the researchers used results of examination of the innovative activity of agricultural enterprises in the Lviv region. The work confirms a rather high level of innovative activity of agricultural enterprises, compared to the enterprises of other branches of the economy of Ukraine. It secures positive transformations in the system of agrarian production of the country. The work demonstrates expansion of some kinds of innovations (in product, process, organization, and marketing) by agricultural enterprises of the Lviv region. The authors of the research have analyzed changes in the expenditures of agricultural enterprises, arguing the dependence of innovative activity on resource attraction. The article suggests perspective directions of some kinds of product innovations at agricultural enterprises.

Key words: agriculture, innovative activity, kinds of innovations, technological efficiency, expenditures, organic production

JEL codes: O13, O31, Q16

INTRODUCTION

Innovative activity is the principal means to improve the competitive capacity of agricultural enterprises in both the domestic and foreign markets. To reach the adequate level of efficiency, they need permanent upgrading of production technologies to support a high quality of products and optimization of costs. The source of extra revenues is supplied by expansion of the range of products and new ways of selling.

Many agricultural enterprises in Ukraine are focused on the innovative way of development. Their innovative activity has resulted in significant trans-formations of the system of agrarian production in the country. However, the scale of implementation of some kinds of innovations by agricultural enterprises is unequal, causing imbalance in the development of the agrarian sector of the country's economy. Thus, it is necessary to study the issues concerning conformity of some innovations to the principles of innovative development.

Considering the peculiarities of innovative processes in agriculture, researchers often use a specific concept, i.e. agrarian innovations (agroinnovations). Except for the simplified approach to innovations in a definite branch, the authors point to its principal

Heorhii Cherevko https://orcid.org/0000-0003-4339-0152; Oksana Smulka https://orcid.org/0000-0002-5549-4744

✉gcherevko@ukr.net

particularity, namely, the application of natural factors and living organisms (animals, plants) in the innovative process [Shubravska 2012, Lupenko et al. 2014, Mohylna 2017]. Taking into account the close relation of agrarian innovations with biological factors of production, Sus [2016] considers agrarian innovations from the position of implementing the tasks of sustainable development in agriculture.

In scientific publications, great attention is paid to peculiarities of the innovative processes in agriculture, which determine their expansion [Yatsiv 2013, Lupenko et al. 2014]. According to Shubravska [2012], the peculiarity of agrarian innovations is that introducing them is not an absolute guarantee for the rise of the competitive capacity of produced commodities or for an increase of their share in the market. The scientists propose different variants of classification of innovations, specifying how their introduction is manifested in agriculture [Sirenko 2010, Yatsiv 2013, Dzhoshar 2015, Karamushka et al. 2018].

Barrientos-Fuentes and Berg [2013] point out the differences of introducing agrarian innovations in different countries. Developing countries are focused on the support for higher quality and diversity of agricultural products, increasing the efficiency of production and distribution processes, improvement of working conditions, and reduction of the burden on the environment. Developed countries are more interested in proposing innovations for satisfying market demand, as well as in the fields related to the generation of alternative energy on the basis of agricultural production. Having studied numerous literary sources, Ogundari and Bolarinwa [2015] suggest that in the scientific publications, innovations in agriculture are primarily associated with technologies, neglecting other innovative effects.

Studying innovative processes in the agriculture of Ukraine, the researchers mark the difficulties occurring while introducing agrarian innovations, including problems of financing, reduction of the number and deterioration of the quality of scientific and research works, lack of qualified personnel [Lupenko et al. 2014, Sus 2016], no integrated state policy, inconsistency of the institutional environment, and needs of innovations transfer [Naymova et al. 2016, Klochan and Klochan 2018]. Having identified the problems, the scientists outline several means for their solution. Moreover, the dynamic nature of the processes occurring in the environment of agricultural enterprises of Ukraine, requires an extended investigation of their innovative activity.

MATERIAL AND METHODS

The authors of the article set out to characterize the results of expansion of the main kinds of innovations in the operation of agricultural enterprises in Ukraine, and to demonstrate the relation between the innovative activity of those enterprises and the results of their economic activity.

To determine the expansion of some kinds of innovations, the researchers used results of observations for the agricultural enterprises of the Lviv region and in Ukraine. Using a specifically developed form of examination, they obtained information about the innovative activity of those enterprises in 2016–2018. The study concerned 86% of medium-size and large (according to the classification by the State Statistics Service of Ukraine) agricultural enterprises of the Lviv region, confirming high representation in the obtained results.

Having studied the data of the State Statistics Service of Ukraine with application of statistical methods, the researchers established the principal tendencies of agricultural enterprise development in Ukraine and the Lviv region which can be connected with the innovative activity of those enterprises.

RESULTS AND DISCUSSION

To define the essence of innovations, the authors used interpretation of the concept in the Law of Ukraine about innovative activity. The Law states that innovations are considered as new-formed (applied) and (or) improved competitive technologies, products or services, as well as organizational-technical solutions of productive, administrative, commercial, and other character that significantly improve the structure and quality of production and (or) social sphere [2002 Law of Ukraine about innovation activity]. That Law stresses the specific relation between innovative activity and scientific research, as it is focused on the use and commercialization of research findings.

At agricultural enterprises, innovative activity is primarily related to application of new techniques, new technologies, and the introduction of organizational-economic and marketing innovations that are capable of securing growth of the enterprises' revenues, and providing solutions to some social and ecological problems. The researchers note that innovative activity in agriculture is associated with new varieties of crops and new breeds of animals [Lupenko et al. 2014]. However, it is worth noting that only a few enterprises are engaged in selective and breeding work. Their activity is mainly funded by the state. Introduction of new varieties of plants and breeds of animals can be considered as one of the directions to improve the technology of production of agricultural products.

The principle question is what change can be considered as an innovation in economic activity. The State Statistics Service of Ukraine explains that innovations are concerned with the degree of "new for the enterprise (organization)". The product might already be used or produced by other enterprises, but when it is new or absolutely improved for the present enterprise, such transformation is considered as an innovation for it [State Statistics Service of Ukraine 2018]. Thus, innovations can include products, processes and methods, which are borrowed by an enterprise from other enterprises and are introduced into its operation. It is worth noting that a new or ungraded product can be considered as an introduced one after it is sold on the market. New production processes, methods of marketing or organization are marked as introduced, when they are actually used in the enterprise operation [State Statistics Service of Ukraine 2015].

In the scientific literature, there are numerous classifications of innovations. The authors of the work suggest that it is reasonable to focus on the approaches which are used by the State Statistics Service of Ukraine. It distinguishes technological and non--technological innovations. However, technological innovations are divided into product (introduction of a technologically new and significantly technologically upgraded product) and process (introduction of a new or significantly improved method of production, or the method of product delivery). Non-technological innovations include marketing and organizational innovations [State Statistics Service of Ukraine 2015]. Other classifications proposed by scientists can serve as specifications for the mentioned list of innovations, being not of principal importance for description of the character of innovative development in a certain branch.

The presented classification is used for determining some kinds of innovations at agricultural enterprises in the Lviv region while observing their expansion. Since the institutional environment for the performance of an innovative activity at agricultural enterprises of the Lviv region does not principally differ from other regions of Ukraine, the obtained results (Table 1) can be

Table 1. Introduction of some kinds of innovations at agricultural enterprises in the Lviv region in 2016–2018*

Kind of innovation	Number of enterprises	Share of enterprises in the total (%)
Product	49	29.0
Including those connected with:		
production of crop products	41	24.3
products of animal breeding	9	5.3
products of agricultural products processing	3	1.8
supply of services in the field of agricultural production	6	3.6
Process	52	30.8
Organization	40	23.7
Marketing	31	18.3
No innovation introduced	82	48.5

*According to the results of observations of agricultural enterprises in the region.

used for presentation of the peculiarities of innovative activity of such enterprises in the country generally.

Referring to the obtained materials, 51.5% of the studied enterprises note that they have recently carried out some activity which can be defined as innovative. It is a rather high figure because, according to the data of the State Statistics Service of Ukraine, the share of innovatively active industrial enterprises accounted for 29.5% in 2016–2018, including enterprises of the processing industry, i.e. 31.8% [State Statistics Service of Ukraine 2019]. In the dynamics, the share of innovatively active industrial enterprises increases (in 2014–2016, it reached 20.3%). Thus, the country stimulates innovative development of the economy.

A rather high share of agricultural enterprises introducing product innovations (29%), has been established due to initiation of production for crop products which are new for the business entity. It primarily deals with the growing of industrial crops for export. In Ukraine, the total cropping area of sunflower increased by 40% in 2018, compared to the area in 2010, while the area of soybean increased by 56%. However, initiation of the production of new kinds of animal breeding products is seen less often. And one can hardly find product innovations related to the processing of agricultural products and supply of services.

In the practice of innovative activity of agricultural enterprises, process innovations are the most often implemented. They primarily expect upgrading of the technologies of production of agricultural products or products of their processing. Almost a quarter of the studied agricultural enterprises in the Lviv region stress that they have recently introduced innovations concerning organization of their operation. To some extent, agricultural enterprises attempted to improve the system of sale of their products.

It is worth noting that expansion of some kinds of innovations among agricultural enterprises differs from the same phenomenon for industrial enterprises. In 2016–2018, non-technological (organizational and/ /or marketing) innovations were introduced by 15.1% of industrial enterprises of Ukraine, whereas technological (product and/or process innovations) – by 14.4 % [State Statistics Service of Ukraine 2019].

Process innovations and upgrading of the technologies of agricultural production, have resulted in a growth of the crop yield and animal productivity. The data presented in Table 2 confirm that the technological efficiency of production for the main kinds of agricultural products by agricultural enterprises of Ukraine has significantly increased in recent years.

Considerable positive changes have been achieved over a relatively short period. One should note that a rapid increase of technological efficiency of production of the majority of principal kinds of agricultural products has occurred not only at export-attractive enterprises. Thus, process innovations get a complex character, and their expansion is forced

Table 2. Dynamics of yield capacity of the main crops and productivity of animals at agricultural enterprises in Ukraine in 2010 and 2015–2018*

Factor	2010	2015	2016	2017	2018	2018, as compared to 2010 (%)
Yield capacity (hwt·ha^{-1})						
cereals	27.6	43.8	50.0	45.6	52.2	189.1
sugar beet	281.5	448.2	494.0	484.1	518.8	184.3
sunflower	15.4	23.0	23.5	21.3	24.1	156.5
soy bean	16.2	18.6	23.4	20.0	26.4	163.0
rape and colza rape	17.0	26.1	25.8	28.0	26.5	155.9
potato	171.0	198.6	212.1	238.4	252.0	147.4
vegetables	207.0	363.4	382.7	435.3	427.4	206.5
fruits and berries	38.2	70.8	72.5	64.9	106.2	278.0
Milk yield per one cow (kg)	3 975	5 352	5 643	6 025	6 190	155.7

*Calculated according to the data of the State Statistics Service of Ukraine.

by strengthening of the competition on the domestic agro-food market.

A rapid growth of exports of some kinds of agro-food products is both a stimulus and an important effect of the innovative activity of agricultural enterprises. In particular, in 2018, export of Ukrainian meat and meat products increased 8.3 times (mainly poultry meat) compared to 2010, whereas export of eggs increased 2.5 times, sugar – 3.6 times, oil and oil products – 1.8 times, grain – 1.5 times.

Such significant growth of exports and other changes in the system of agrarian production in Ukraine cannot be associated only with technological innovations. Development of agricultural enterprises is also supported by organizational and marketing innovations.

Organizational innovations concern improvement of the system of management of an enterprise, material incentive of personnel, relations of the enterprise with other enterprises and organizations. Some positive movement is observed in the system of labor payment. Thus, in 2010, the average salary at agricultural enterprises in Ukraine accounted for 64% of the average salary in the economy, while in 2018, the figure increased to 81% [State Statistics Service of Ukraine 2019].

Implementation of organizational innovations is partially connected with the process of establishing large agrarian companies in Ukraine. In 2019, there were 35 companies in the country, holding more than 50 thousand ha of agricultural land, and their total land bank constituted above 4.5 million ha [State Statistics Service of Ukraine 2018]. This deals with vertically integrated structures, in which production of agricultural raw materials is done along with their primary processing and sale, including export. Performance of such large structures differentiates the kinds of innovations which they introduce integrally to strengthen their competitive capacity.

Marketing innovations are sometimes introduced by agricultural enterprises. They suggest new channels or methods of product sales. Agricultural producers make transformations in the stimulation of sales less often. But marketing innovations also provide a considerable positive effect. They force rather high rates of growth in the sale price of agricultural products. Particularly, in 2019, they increased 2.05 times compared to 2014, while the index of the price of material

and technical resources of industrial origin for agricultural enterprises constituted 188% for the mentioned period [State Statistics Service of Ukraine 2019].

Upgrading of production technologies, which contributes to a growth of crop yield and animal productivity, and shapes the essence of the process innovations in agriculture, requires great funds. Recently, there has been a rapid growth of the nominal indices of production costs at agricultural enterprises in Ukraine. However, it is worth noting that their formation is considerably influenced by inflation processes, forced by increases in the price of material resources and services, rising salary levels, etc. To neutralize the inflation factor in the calculations, it is necessary to make deflation of the corresponding indices.

Table 3 demonstrates the indices of expenditures per 1 ha of the main agricultural crops, deflated to the level of 2010, at agricultural enterprises in the Lviv region, where the nominal indices are divided by the inflation ratio for the corresponding period. The last one is a product of the chain (referring to the previous year) factors of total expenditures and production of agricultural products by the enterprises of Ukraine.

The data in Table 3 characterizes changes in the physical quantity of resources used for the production of agricultural products. It confirms that the increase in volume mainly happened in the period until 2014. Afterwards, the deflated expenditures per 1 ha of crops did not demonstrate growth and were often reduced. This suggests that agricultural enterprises have lately increased their output not by means of more intensive use of resources, but due to more efficient use.

Product innovations can be also introduced by domestic producers in the form of increased output of organic products. Ukraine improved its position in terms of the area of agricultural lands certified as organic, taking 11th place among European countries and the 20th position globally in 2017. In that year, the area of agricultural lands certified as organic took 421.5 thousand ha, and there were 375 registered certified organic enterprises [Agropolit.com 2018].

Organic agricultural production is undergoing transformation into a prospective direction for agrarian business. However, in Ukraine, it is mainly oriented on exports. In our country, consumption of organic products per a person accounted for only

Table 3. Deflated (to the level of 2010) production expenditures per 1 ha of agricultural crops at the enterprises in the Lviv region in 2010, 2014–2018*

Factor	2010	2014	2015	2016	2017	2018	2018, as compared to 2010 (%)
Crops expenditures (UAH·ha^{-1})							
cereals	3 322	5 222	5 041	5 417	4 870	5 062	152.4
including wheat	3 197	4 980	4 876	5 443	4 772	4 904	153.4
grain maize	5 043	6 578	6 629	6 789	6 748	6 746	133.8
sugar beet	11 024	12 101	12 511	13 060	11 153	11 396	103.4
sunflower	3 154	4 306	4 987	4 525	4 412	4 659	147.7
soy bean	2 927	4 901	4 449	5 445	5 121	5 233	178.8
rape and colza rape	5 794	6 202	5 449	6 401	6 357	6 192	106.9
potato	28 084	32 534	29 551	23 528	19 501	20 084	71.5
Crops expenditures (UAH·ha^{-1})							
fruit	2 183	23 839	10 596	14 134	15 756	5 644	258.5
berries	25 425	36 690	32 342	23 322	13 234	10 756	42.3

*Calculated according to the data of the Main Department of Statistics in Lviv region and the sources [State Statistics Service of Ukraine 2019].

EUR 3 in 2017, while a common resident of Europe spent EUR 36.4 for such kinds of products, and a resident of the EU – EUR 53.7. The principal products of organic production which are exported by agricultural producers of Ukraine include cereals, oil seeds, legumes, berries, fruits and wild plants [Dykalenko 2018].

Nowadays, niche crops are getting more popular among the small and medium-size producers of Ukraine. Those crops are little-known and labor intensive, but their cultivation can secure a high profit per unit of area [Cherevko 2018]. In Ukraine, such crops include lentil, chickpea, Chickasano pea, sorgo, nuts, sugar maize, mustard, berries, medical plants, and some vegetables.

Introduction of product innovations related to the production of organic products, and the growing of niche crops, is characterized by high risks. Lower risks are associated with innovations which secure a rise in the quality of produced products, and where organization of its processing is under the brand of a regional product. Such activity is particularly promising for small agricultural producers, and such examples are observed in other regions of Ukraine. Creation of servicing cooperatives by small farmers is an organizational innovation as a solution to the corresponding problems.

CONCLUSIONS

The concept of innovation has a relative character. Innovative can be a product, technology or method of organizing production or commercial solutions that is already being used by other entities but is being used for the first time or substantially improved for a particular enterprise.

Ukrainian agricultural enterprises are characterized by relatively high innovation activity. In 2016–2018 the share of innovatively active enterprises (about 50% according to the survey in the Lviv region) significantly exceeds the share of innovatively active industrial enterprises (29.5% over the same period in Ukraine).

Among the various types of innovations in the surveyed agricultural enterprises, process innovations dominate (51% of enterprises implemented them). The introduction of process innovations has led to a marked increase in technological efficiency and an increase in agricultural production in recent years. The share of agricultural producers introducing product innovations in the "first time for enterprise" category is quite high. Particularly, medium and large agricultural enterprises expand the assortment of cultivated industrial crops. Small agricultural producers show some interest in the production of fruits and berries, as well as some little-known (niche) crops.

Process and product innovations in agricultural enterprises over the last decade have caused significant changes in the agricultural production system of Ukraine. In their turn, they made it necessary to introduce organizational and marketing innovations. In 2016–2018 organizational innovations were implemented by 24% of surveyed companies, marketing – 18%. Many agricultural enterprises also introduced different kinds of innovations, confirming the complex character of their innovative activity. There are strong incentives in Ukraine to continue innovation processes in agriculture that are linked to the prospects of exporting certain types of agricultural food products. Agricultural enterprises' innovation activity is expected to increase due to increased investment in the sector after the agricultural land market is set to start functioning in 2020.

REFERENCES

Agropolit.com (2018). Analiz rynku orhanichnoyi produktsiyi v Ukrayini [Analysis of the market for organic products in Ukraine] (2018). Retrieved from https://agropolit.com/spetsproekty/407-analiz-rinku-organichnoyi-produktsiyi-v-ukrayini [accessed: 05.09.2019].

Barrientos-Fuentes, J.C., Berg, E. (2013). Impact assessment of agricultural innovations: a review. Agronomía Colombiana, 31 (1), 120–130.

Cherevko, I. (2018). Ponyattya nishevykh kul'tur ta yikhnye mistse u dyversyfikatsiyi sil's'kohospodars'koho vyrobnytstva [Concept of niche cultures and their place in the diversification of agricultural production]. Agrarian Economy, 11 (1–2), 5–14, https://doi.org/10.31734/agrarecon2018.01.005

Dykalenko, M. (2018). Kil'kist' vyrobnykiv orhanichnoyi produktsiyi v Ukrayini za 15 rokiv zrosla u 100 raziv [The number of organic products in Ukraine for 15 years has grown 100 times]. Retrieved from https://landlord.ua/news/kilkist-virobnikiv-organichnoyi-produktsiyi-v-ukrayini-za-15-rokiv-zrosla-u-100-raziv/ [accessed: 30.09.2019].

Dzhoshar, A.V. (2015). Stratehichni napryamy ahroinnovatsiynoho rozvytku [Strategic directions of agro innovation]. Scientific Journal of National University of Life and Environmental Sciences of Ukraine. Energy and Automation, 226, 221–229.

Karamushka, O., Moroz, S., Vasylieva, N. (2018). Information component of innovative support for agricultural enterprises capital. Baltic Journal of Economic Studies, 4 (4), 145–150.

Klochan, V., Klochan, I. (2018). Improvement of the mechanism of state regulation of investment in the innovative development of the agrarian sector. Baltic Journal of Economic Studies, 4 (2), 99–105, DOI: https://doi.org/10.30525/2256-0742/2018-4-2-99-105

Lupenko, Yu.O., Malik, M.J. et al. (2014). Innovatsijne zabezpechennia rozvytku silskoho hospodarstva Ukrainy: problemy ta perspektyvy [Innovative support for the development of agriculture in Ukraine: problems and prospects]. NNC IAE, Kyiv.

Mohylna, L.M. (2017). Osoblyvosti rozvytku ta aktyvizatsiyi ahroinnovatsiy sil's'kohospodars'kymy pidpryyemstvamy [Features of development and activation of agroinnovations by agricultural enterprises]. Visnyk Odes'koho National'noho Universytetu – Odesa. Ekonomika/Scientific Bulletin of the Odessa National Economic University, 22 (2), 91–95.

Naymova, L.N., Mityay, O.V., Galitsky, A.N. (2016). Development of the innovative enterprises of agrarian production in the current economic system of Ukraine. Scientific Bulletin of Polissia, 3 (7), 124–129.

Ogundari, K., Bolarinwa, O.D. (2015). Impact of agricultural innovation adoption: a meta-analysis. The Australian Journal of Agricultural and Resource Economics, 62 (2), 217–236.

Shubravska, O. (2012). Innovatsiynyy rozvytok ahrarnoho sektora ekonomiky Ukrayiny: teoretyko-metodolohichnyy aspekt [Innovative development of the agrarian sector of Ukraine's economy: methodological-theoretic aspect]. Ekonomika Ukrayiny/Economy of Ukraine 1, 27–35.

Sirenko, N.M. (2010). Upravlinnya stratehiyeyu innovatsiynoho rozvytku ahrarnoho sektora ekonomiky Ukrayiny [Managing innovative strategy of development of the agrarian sector of Ukraine's economy]. МНАУ, Mykolaiiv.

State Statistics Service of Ukraine (2015). Metodolohichni polozhennya zi statystyky innovatsiynoyi diyal'nosti [Methodological provisions on statistics of innovation activity]. Kyiv.

State Statistics Service of Ukraine (2018). Naukova ta innovatsijna diialnist Ukrainy 2018. Statystychnyj zbirnyk [Scientific and Innovation Activity in Ukraine, 2018. Statistical yearbook].

State Statistics Service of Ukraine (2019). Silske hospodarstvo Ukrainy 2018. Statystychnyj zbirnyk [Agriculture of Ukraine for 2018. Statistical yearbook].

Sus, T.Y. (2016). Finansovo-orhanizatsiyni problemy roz-vytku ahroinnovatsiy: natsional'nyy i rehional'nyy as-pekty [Financial and organizational problems of agrar-ian investments development: national and regional aspects]. Rehional'na ekonomika/Regional Economy, 3, 135–141.

Yatsiv, I.B. (2013). Konkurentospromozhnist' sil's′kohospo-

dars'kykh pidpryyemstv [Competitive capacity of agri-cultural enterprises]. Ukrayins'kyy bestseler, Lviv.

Zakon Ukrayiny pro innovatsiynu diyal'nist'. Vidomosti Verkhovnoyi Rady Ukrayiny (VVR), 2002, N 36, st. 266 [Law of Ukraine about innovation activity. Offi-cial Gazette (OG) of the Verkhovna Rada 2002, No 36, p. 266].

CECHY I WYNIKI DZIAŁALNOŚCI INNOWACYJNEJ PRZEDSIĘBIORSTW ROLNICZYCH UKRAINY

STRESZCZENIE

W artykule omówiono istotę działalności innowacyjnej i przedstawiono wyniki badań procesów innowacyj-nych w przedsiębiorstwach rolniczych Ukrainy. Aby poznać specyfikę tych procesów, wykorzystano wyni-ki badania działalności innowacyjnej w przedsiębiorstwach rolniczych regionu lwowskiego. Stosunkowo wysoki poziom innowacyjności wymienionych przedsiębiorstw został ustalony w porównaniu z przedsię-biorstwami innych gałęzi ukraińskiej gospodarki, co zapewniło zauważalne pozytywne zmiany w systemie produkcji rolnej w kraju. Pokazano rozprzestrzenianie się niektórych rodzajów innowacji (produktowych, procesowych, organizacyjnych, marketingowych) w przedsiębiorstwach rolniczych badanego regionu. Prze-analizowane zostały zmiany kosztów przedsiębiorstw rolniczych, które odzwierciedlają zależność innowacji od intensywności przyciągania zasobów. Rozważono perspektywy niektórych rodzajów innowacji produkto-wych w przedsiębiorstwach rolnych.

Słowa kluczowe: rolnictwo, działalność innowacyjna, rodzaje innowacji, efektywność technologiczna, ko-szty, produkcja organiczna

COMPANY CONSOLIDATION AND ITS IMPACT ON THE PRECARIAT IN POLAND

Aneta Ejsmont✉

Prof. Edward F. Szczepanik State Higher Vocational School in Suwalki

ABSTRACT

The aim of this article is to present research on consolidation of enterprises, especially units operating in the private sector. The method of comparative analysis and synthesis of the author's own research results was used in the study, which proved the hypothesis that consolidation of the surveyed enterprises, which operate in the private sector, causes a gradual decrease in the phenomenon of the precariat, mainly due to an increase in the number of indefinite duration employment contracts. The author personally conducted telephone interviews with managers of variously sized companies. The survey covered 1,000 business entities from Poland, including 550 micro enterprises, 280 small enterprises, 120 medium-sized entities and 50 large enterprises, which in the years 2005–2018 were transformed as a result of consolidation processes (mergers or acquisitions). These phone conversations were conducted as free interviews.

Key words: precariat, enterprise consolidation, private sector, Poland

JEL codes: G34, J32, I18

INTRODUCTION

Enterprises conducting business activity in Poland may encounter various unpredictable or even critical situations. Their consequences may lead to ceasing business, especially for entities which have precarious employment, which in effect may cause destabilisation. *Precariat* (Latin – dependent on favour) is defined as a state of lack of certainty, constancy and stability or as a chronic inability to foresee the future and permanent fear that it will only bring something worse [Frase 2013]. This can be applied to the uncertain situation faced by some employees, who do not have permanent contracts. Enterprises in Poland very often lower employment costs by offering junk job contracts.

The aim of the article is to verify the research hypothesis: that consolidation of enterprises in the private sector may cause a gradual decrease of the phenomenon of precariat in Poland and consequently increase employees' possibilities for permanent employment. This may lead to greater stability of economic activity on a meso and macro scale.

Consolidation may contribute to enhancement of the financial condition of the newly created enterprise. This gives a real chance to increase possibilities to hire on indefinite duration contracts, which guarantee security of employment. The impact of private company consolidation on limiting the precariat is supported by empirical data. This article presents data regarding junk job contracts for various size companies.

Aneta Ejsmont https://orcid.org/0000-0002-7320-2274

✉ aneta.ejsmont@gmail.com

Comparative analysis method and synthesis of the author's own research results were used in this study, which allowed to prove the hypothesis that consolidation of the surveyed enterprises functioning in the private sector causes a gradual decrease in the phenomenon of the precariat, mainly owing to the increase in the number indefinite duration contracts. The author personally conducted telephone interviews with managers from various size enterprises. One thousand entities from Poland were covered by this research, including: 550 micro enterprises, 280 small, 120 medium-sized and 50 large companies, which in 2005–2018 were transformed as a result of consolidation processes (mergers or acquisitions). These phone conversations were conducted as free interviews. Structure indicators were calculated on the basis of the data regarding the number of people employed by the surveyed units, in which the above-mentioned forms of employment were offered, collected through telephone conversations conducted by the author with managers of these enterprises.

THE ESSENCE OF PRECARIAT IN THE ACTIVITIES OF ENTERPRISES

The task to clarify definition of precariat has been undertaken by Michael Hardt, an American professor of literary theory at Duke University and Antonio Negri, an Italian ethicist and Marxist political philosopher. In their works they have written that it is a new group or even class of individuals subjected to the regime of flexibility consisting in subjecting employees to permanent insecurity in the offered employment. Precariousness is a term describing the condition, typical for late capitalism, of living and working in uncertainty, instability and unpredictability [Hardt and Negri 2012].

Another author, Guy Standing, a British social researcher and economist specialising in research on development, and professor at the School of Oriental and African Studies, University of London, defines precariat as a social group which does not feel secure due to the risk of losing a job [Standing 2014a, b; Tetlow 2017]. In this sense, precariat may be described as a neologism joining the adjective "precarious" with the noun "proletariat".

There is a conviction that globalisation has led to fragmentation of societies in many countries [Marques et al. 2017]. Owing to this, the world has moved towards flexible and open markets, and the precariat has not disappeared but a new much more diverse social global structure has emerged, whose existence depends on the economic situation [Standing 2014a, Lise and Robin 2017].

The precariat, i.e. the group of well-educated but poorly paid employees hired on flexible employment terms, is growing rapidly and is becoming a global phenomenon [Forbes and Barker 2017]. It is nothing less than a class of working people who, instead of gaining rights, loses them [Siegmann and Schiphorst 2016]. It loses some of the cultural, social and economic rights which other classes have earned.

In many ways, the situation of the precariat in the post-industrial era is worse than the situation of workers from the industrial era. Workers, although they worked hard, had stable jobs. Additionally, they could rely on an entire system of protection, such as: allowances, pension or other help from the state. The precariat cannot count on that, furthermore struggling with chronic lack of stability [Smil 2017]. They very often do work which is beneath their qualifications simply because they have to.

In relation to the problem of destabilisation of economic activity conducted by entities which apply precarious employment policies, it seems that consolidation is essential – process of joining economic entities as a result of which a new unit is created. Mergers or acquisitions contribute to this.

The problem of precariat concerns especially young people striving to stabilise their life. In Poland, the current generation of young workers may be the first generation after WW2 which will have worse living conditions than their parents. A question arises whether the labour market in Poland is so inflexible. According to Statistics Poland data (the institution which gathers statistics in Poland), in 2018 the unemployment rate among people under the age of 25 amounted to 11.5%, i.e. 3.1% less compared to 2017 [GUS 2019].

According to Eurostat, in 2018 in EU-28, the unemployment rate among young people was 15.2%. Statistics describing the situation on the labour market

of young people confirm that it is connected with the education system, also reflecting discrepancies between learned abilities and requirements of employers. In the face of new legal provisions regarding employment in the EU Member States, enacted to increase labour market liberalisation by introducing more flexible employment forms, such as e.g. junk contracts or mandatory contracts, there is a clear division between people hired on indefinite duration contracts and those employed on the basis of junk job contracts. Mainly young people are hired on the latter type of agreements. So, although in the EU countries unemployment rates among the youth are higher than in Poland, when comparing employment forms, both in Poland as well as in other EU countries the situation is identical [Eurostat 2019].

MATERIAL AND METHODS

Economic slowdown at the end of the 1990s as well as further employment rationalisation, forced by the necessity to lower production costs, contributed to another increase in unemployment. Additionally, there was an accumulation of regulatory and fiscal burden, which was too difficult to deal with. Europe generates approx. 20% of global GDP, consuming at the same time 50% of social expenditures worldwide. To finance these social expenditures, Europe needed to increase labour costs and taxes, which led to imbalance which was exacerbated by the global economic crisis. Overly rigid labour laws in many countries, e.g. in Spain, meant that the costs of adjusting employment to the market situation were highly inflated [García and Sorolla 2017, Lopes and do Amaral 2017, Eurostat 2019].

According to the data calculated on the basis of the Employment Flexibility Index (EFI) measuring flexibility of employment contracts regulated by the Labour Code, Poland was ranked 30th out of 41 EU and OECD countries. The result is the same as a year before. In 2017–2018, the work of the Labour Law Codification Commission was needed, confirming that both in Poland as well as in other EU countries there is no effective reform of the Labour Code. It is influenced by stiff labour regulations that push less qualified people or, in the regions with low level of

salaries, to mandate contracts, specific-task contracts or to the grey market. This state is also reflected in other problems: badly constructed social assistance services and pension systems as well as high share of employment in micro enterprises and farming [Lithuanian Free Market Institute 2019].

Flexibility in employment is generally treated as a basic indicator of precarization consisting in employing and dismissing staff freely, e.g. owing to civil law contracts, i.e. mandate or specific-task contracts. Such employees are also self-employed or have temporary contracts with a very short notice period and which do not require justification of the causes for dismissal [Drela 2016]. The reasons for this situation may be found in the increase of labour costs caused by over-taxing entrepreneurs [Fraisse et al. 2015, Zirgulis and Šarapovas 2017]. From the author's own calculation made on the basis of GUS data, in 2005––2017 entrepreneurs preferred to hire on mandate and specific-task contracts, as shown in Figure 1.
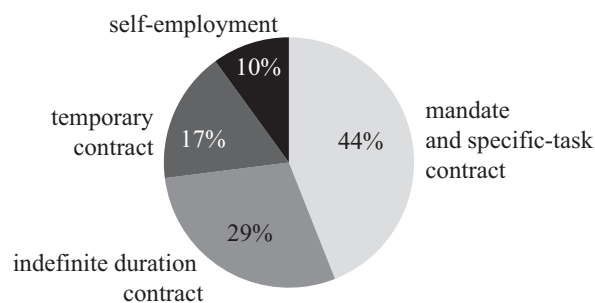

Fig. 1. Types of employment offered by total enterprises in 2005–2017

Source: Author's own calculations based on GUS [2016–2018, 2017–2019].

The data presented in Figure 1 unambiguously shows that the most popular types of employment are still mandate and specific-task contracts (as much as 44%). Self-employment is the least popular (10%). Indefinite duration contracts are in second place, due to the fact that the way to avoid hiring permanent employment workers is to replace employment contracts with civil law agreements (i.e. specific-task and mandate contracts).

Destabilisation of economic activity conducted by enterprises in Poland is a main reason for constant avoidance of indefinite duration contracts. Currently companies conduct precarious policies towards their employees. Destabilisation is seen in the present condition of companies from Poland regarding their share in generating GDP. But an increased number of indefinite duration contracts contributes to an increase in work efficiency which is then reflected in enhanced participation in generating GDP (Fig. 2).
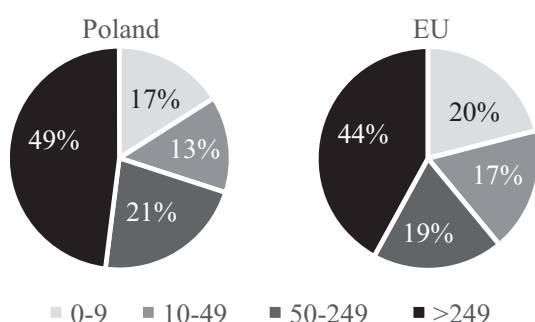

Poland   EU

Poland: 17%, 13%, 21%, 49%

EU: 20%, 17%, 19%, 44%

■ 0-9   ■ 10-49   ■ 50-249   ■ >249

Fig. 2. The structure of gross value added at factor costs made in enterprises according to their size in Poland and the EU (state at the end of 2016)

Source: Author's own calculations based on Eurostat database.

Analysis of data presented in Figure 2 regarding the size of companies shows that results obtained by Polish units were generally worse compared to total EU companies. It especially concerns micro enterprises as well as small companies, since this group is characterised by the biggest distance to the EU. Their share in generating gross value added for the enterprise sector by the end of 2016 amounted to 17% and 13%, respectively, whereas the participation of micro and small companies in EU was 20% and 17% (a difference of almost 4%). On the other hand, Polish medium-sized and large companies have had and will have higher contribution to generating this value than entities of the same size in the EU (medium-sized: 21.3% PL, 18.7% EU; large: 48.6% PL, 43.7% EU).

Participation in generating GDP measured by the gross value added indicator is reflected in the types of employment which employers can offer. It can also be seen in the results of controls conducted by the National Labour Inspectorate (Państwowa Inspekcja Pracy).

Controlled entities were diverse in terms of employment size and activity profile. Inspectors analysed, from 2005–2018, a total of 14,600 civil law contracts and stated that approx. 3,000 had features of employment contracts (20.5%). The data shows that the use of civil law contracts under conditions proper for a work relationship applied to enterprises employing at least 250 people to a smaller extent compared to micro and small companies [Państwowa Inspekcja Pracy 2019].

Therefore, a question arises: why is this so? What drives owners of smaller enterprises in the private sector to not offer indefinite duration contracts to potential employees on a greater scale? Among the types of employment there are still many civil law contracts or, even worse, work in the grey market.

Consolidation processes in the economy happen in light of the socio-economic changes which determine the activities of enterprises in Poland. Micro, small, medium-sized and large enterprises, all adjust to new conditions, especially regarding economic activity in different situations [Lange and Fornaro 2017]. In professional literature, consolidation is defined as the joining of enterprises in such a way that they lose their legal identity and a new unit is created [Forni and Novta 2014]. Having regard to the above tendencies, consolidation of enterprises should be considered as inevitable. Aims of consolidation are usually connected with the flow of economic processes and are precisely fixed in current and expected conditions for the conducted activity [Kotas 2013, Simon and Kresalek 2017].

Consolidation may positively impact an increase in offering better employment conditions. Micro, small, and medium-sized companies comprise the majority of enterprises in Poland as well as in the EU (99.8%), so they offer the largest number of jobs [GUS 2016––2018]. These types of companies most often join with large enterprises or are taken over by holdings or concerns. Mergers and acquisitions are essential in shaping industry structure and thus economic growth [Katz et al. 1997, Cotleţ and Monea 2007, Liu and Qiu 2013]. Interestingly, the global crisis was a good period for mergers and acquisitions. For those with capital, large companies could buy not only direct competitors but many small entities with development prospects [Sapkota et al. 2019].

There were 323 mergers and acquisitions (M&A) in Poland in 2018, and their value reached EUR 6.5 billion. Total worth of transactions decreased by approx. 40% per year. The M&A market in Central and Eastern Europe saw a 12% increase in the value of concluded transactions that year, obtaining one of the best results during last the five years at a worth of EUR 80.5 billion [CMS Legal Services EEIG 2019]. At the beginning of 2019 in Poland the situation for mergers and acquisitions had stabilised: 46 transactions were concluded, i.e. four more than in the same quarter in 2018 [eGospodarka.pl 2019].The value of M&A conducted worldwide in the first half of 2019 was 12% lower than in the same period a year before. The number of such transactions decreased by 16% [Kozieł 2019].

It seems essential to identify factors affecting the consistent spread of the precariat in the private sector, as well as to elaborate dependency of this phenomenon on one basic determinant which may significantly decrease it, i.e. consolidation. Consolidation creates an increase in the market value added which the entities are able to generate [Nicu 2012], and it may be of key importance in making decisions regarding employment on specified terms.

In light of the considerations stated above, the author personally conducted telephone interviews with managers from variously sized enterprises. 1,000 companies from Poland were researched, including: 550 micro enterprises, 280 small, 120 medium-sized and 50 large companies which in 2005–2018 were transformed as a result of consolidation processes (mergers or acquisitions). These phone conversations were conducted as free interviews. Structure indicators were calculated on the basis of the data regarding the number of employees hired by the researched entities, in which the above-mentioned form of employment was offered. The data was collected through the author's telephone conversations with managers of these enterprises.

RESULTS AND DISCUSSION

Analysis of the data, presented in Figure 3, shows unambiguously that these enterprises participated in mergers or acquisition.
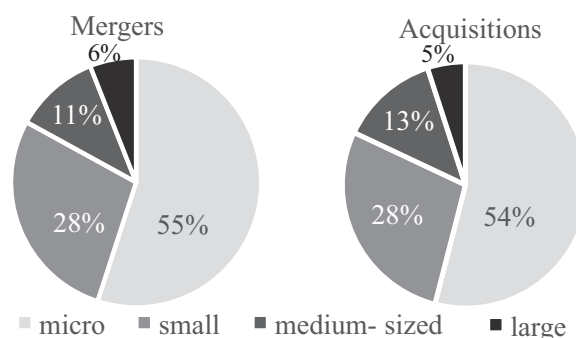

Fig. 3. Structure of enterprises resulting from mergers or acquisitions (state at the end of 2018)

Source: Author's own elaboration based on surveys.

The data presented in Figure 3 shows that at the end of 2018, in the process of mergers as well as acquisitions, micro enterprises participated the most intensely, while small and medium-sized companies took part to a smaller degree, and large entities – the least. As a result of consolidation, micro and small enterprises exceeded the scale, transforming into bigger units.

When analysing various employment forms, the author researched the number of particular contracts signed with employees in different sized companies which had not participated in the process of consolidation, and those which had already transformed into bigger units (medium-sized or large). The data is presented in Table 1.

On the basis of the data presented in Table 1, it may be unambiguously stated that the most popular type of employment was indefinite duration contracts. Smaller enterprises that transformed into larger companies as a result of consolidation had better possibilities to offer their staff stable employment. Owing to this, mandate and specific-task contracts were less popular; the owners of the researched entities signed fewer of these types of contracts when their enterprises were enlarged in the process of merger or acquisition. The structure of particular employment types is presented in Table 2.

The research on the structure of employment types regarding the size of enterprises proved that owners of micro and small companies, contrary to medium-sized and large entities, more often employed people offering them mandate or specific-task contracts. How-

Table 1. Employment types offered to employees by owners of different size enterprises (state at the end of 2018)

Enterprises	Mandate contract		Specific-task contract		Temporary contract		Indefinite duration contract	
	before consolidation	after consolidation	before consolidation	after consolidation	before consolidation	after consolidation	before consolidation	after consolidation
Micro	3 294	3 243	2 859	2 750	947	15 092	2 598	29 244
Small	2 474	2 517	4 972	5 052	4 619	37 253	7 210	60 134
Medium-sized	1 565	1 477	1 037	1 077	8 966	73 697	16 355	122 478
Large	1 697	1 599	1 625	777	16 872	18 096	20 773	23 197
Total	9 030	8 836	10 493	9 656	31 404	144 138	46 936	235 053

Source: Author's own elaboration based on own research conducted among managers of various sizes of companies.

Table 2. The structure of particular employment types in different sized enterprises (state at the end of 2018)

Number of contracts by type (%)	Enterprises				
	micro	small	medium-sized	large	total
Mandate before consolidation	36	27	18	19	100
Mandate after consolidation	37	28	17	18	100
Specific-task before consolidation	27	47	10	16	100
Specific-task after consolidation	28	52	11	9	100
Temporary before consolidation	3	15	29	53	100
Temporary after consolidation	10	29	51	10	100
Indefinite duration before consolidation	6	15	35	44	100
Indefinite duration after consolidation	12	26	10	52	100

Source: Author's own elaboration based on surveys.

ever, before consolidation there were many more such contracts and after consolidation the same enterprises offered them significantly less. Regarding temporary agreements, large entities offered them more often before consolidation and much less often after they transformed into even bigger units. Indefinite duration contracts were more popular in large enterprises, both before and after consolidation, however large companies, which were created as a result of mergers with smaller or the same size companies or those which were created as a result of acquisitions of micro or small enterprises by concerns or holdings, had better possibilities and offered their employees this type of contract more often.

CONCLUSIONS

In this article, the author tried to show that the problem of destabilisation of economic activity results in having enterprises operating in the private sector conduct precarious employment policies. In Poland, private entities may face many, very often unfavourable or even unpredictable situations whose consequences can threaten the very existence of the company, which in effect causes destabilisation of employment conditions.

Currently in many countries, at least one fourth of the population lives in the *precariat*. Unfortunately, this phenomenon is very dangerous to the whole economy. Therefore, the aim of this article

was to attempt to verify the research hypothesis that consolidation of enterprises functioning in the private sector may gradually decrease the phenomenon of precariat in Poland or at least, mitigate it. When researching the impact of consolidation on such common phenomenon as precariat, the author personally conducted telephone interviews with managers of variously sized companies. One thousand enterprises in Poland, which in 2005–2018 were transformed due to mergers or acquisitions, were included in this research (550 micro enterprises, 280 small companies, 120 medium-sized and 50 large units). The conducted research proves that small enterprises, including micro companies, contrary to concerns or holdings, were not able to employ a bigger number of people on indefinite duration contracts, offering them only temporary contracts or even mandate or specific-task contracts. Only in the consolidation process, as a result of a merger or an acquisition, transforming into medium-sized or large entities, could their owners offer indefinite duration contracts.

REFERENCES

CMS Legal Services EEIG (2019). Emerging Europe: M&A Report 2018/2019. CMS and DealWatch, London.

Cotleţ, D., Monea, A. (2007). Some Aspects Concerning Mergers of Public Limited Liability Companies in European Union. Annals of the University of Petrosani Economics, 7, 94–96.

Drela, K. (2016). Prekariat – kierunki zmian i wpływ na rynek pracy [Precariat – Directions of Changes and Impact on the Labour Market]. Research Papers of the Wroclaw University of Economics, 449, 118–129.

eGospodarka.pl (2019). Fuzje i przejęcia w Polsce w I kw. 2019 r. [Mergers and Acquisitions in Poland in Q1 2019]. Retrieved from http://www.egospodarka.pl/155385,Fuzje-i-przejecia-w-Polsce-w-I-kw-2019-r,1,39,1.html [accessed: 11.04.2019].

Eurostat (2019). Eurostat Regional Yearbook. Luxembourg.

Forbes, M., Barker, A. (2017). Local Labour Markets and Unemployment Duration. Economic Record, 93 (301), 238–254.

Forni, L., Novta, N. (2014). Public Employment and Compensation Reform During Times of Fiscal Consolidation. IMF Working Paper, WP14/192. Retrieved from https://www.imf.org/external/pubs/ft/wp/2014/wp14192.pdf [accessed: 16.10.2019].

Fraisse, H., Kramarz, F., Prost C. (2015). Labor Disputes and Job Flows. ILR Review, 68 (5), 1043–1077, https://doi.org/10.1177/0019793915591989

Frase, P. (2013). The Precariat: A Class or a Condition? The Murphy Institute, New York.

García, J.R., Sorolla, V. (2016). Frictional and Non- frictional Unemployment in a Labour Market with Matching Frictions. The Manchester School, 85 (4), 450–465, https://doi.org/10.1111/manc.12154

GUS (2016–2018). Działalność przedsiębiorstw niefinansowych. Publikacje za lata 2016–2018 [Activity of Non-Financial Enterprises. Publications of period 2016––2018]. Warszawa.

GUS (2017–2019). Monitoring Rynku Pracy. Kwartalna informacja o rynku pracy. Publikacje za lata 2017–2019 [Labour Market Monitoring. Quarterly Information on the Labour Market. Publications of period 2017–2019]. Warszawa.

GUS (2019). Popyt na pracę w I kwartale 2019 r. Informacje Sygnalne [Labour Force Survey in Poland I Quarter 2019. Signal Information]. Warszawa.

Hardt, M., Negri A. (2012). Rzecz-pospolita [Re-public]. Korporacja Ha!art, Kraków.

Katz, J.P., Simanek, A., Townsend, J.B. (1997). Corporate Mergers and Acquisitions: One More Wave to Consider. Business Horizons, 40 (1), 32–40, https://doi.org/10.1016/S0007-6813(97)90023-9

Kotas, A. (2013). Znaczenie ryzyka w procesie przejęć przedsiębiorstw [The Importance of Risk in the Process of Acquisitions]. Zeszyty Naukowe Polskiego Towarzystwa Ekonomicznego, 14, 87–107.

Kozieł, H. (2019). Mniej fuzji i przejęć na świecie w pierwszej połowie 2019 roku [Fewer Mergers and Acquisitions in the World in the First Half of 2019]. Retrieved from https://www.rp.pl/Finanse/190719324-Mniej-fuzji-i-przejec-na-swiecie-w-pierwszej-polowie-2019-roku.html [accessed: 16.10.2019].

Lange, C.D., Fornaro, J.M. (2017). Consolidation of Variable Interest Entities for Private Companies. Accounting Alternatives under ASU 2014-07. CPA Journal, 87 (2), 46–50.

Lise, J., Robin, J.M. (2017). The Macrodynamics of Sorting between Workers and Firms. American Economic Review, 107 (4), 1104–1135, https://doi.org/10.1257/aer.20131118

Lithuanian Free Market Institute (2019). Employment Flexibility Index 2019, EU and OECD Countries.

Liu, Q., Qiu, L.D. (2013). Characteristics of Acquirers and Targets in Domestic and Cross-border Mergers and Acquisitions. Review of Development Economics, 17 (3), 474–493, https://doi.org/10.1111/rode.12044

Lopes, J.C., do Amaral, J.F. (2017). Self-defeating Austerity? Assessing the Impact of a Fiscal Consolidation on Unemployment. Economic and Labour Relations Review, 28 (1), 77–90, https://doi.org/10.1177/1035304616689658

Marques, A.M., Lima, G.T., Troster, V. (2017). Unemployment persistence in OECD countries after the Great Recession. Economic Modelling, 64, 105–116, https://doi.org/10.1016/j.econmod.2017.03.014

Nicu, I.E. (2012). Company Performance Measurement and Reporting Methods. Annals of the University of Oradea. Economic Science, 21 (2), 700–707.

Państwowa Inspekcja Pracy (2019). Sprawozdanie z działalności Państwowej Inspekcji Pracy – 2018 [Report on the Activities of the National Labour Inspectorate – 2018]. Warszawa.

Sapkota, R., Ivanov, S., Bachman, P., Vermillion, L., Goyal, T. (2019). Issues and Analysis of Leadership, Strategy, Behavior, and Accounting of Mergers and Acquisitions: a Case Study of a Merger of Two Mega-Corporations. International Journal of Organizational Innovation, 12 (2), 180–191.

Siegmann, K.A., Schiphorst, F. (2016). Understanding the Globalizing Precariat: from Informal Sector to Precarious Work. Progress in Development Studies, 16 (2), 111–123, https://doi.org/10.1177/1464993415623118

Simon, S., Kresalek, P. (2017). The Necessity and Characteristics of Concern Analysis. Public Finance Quarterly, 62 (3), 362–379.

Smil, V. (2017). Unemployment: Pick a Number. IEEE Spectrum, 54 (5), 24, https://doi.org/10.1109/MSPEC.2017.7906894

Standing, G. (2014a). Prekariat. Nowa niebezpieczna klasa [Precariat. A New Dangerous Class]. Wydawnictwo Naukowe PWN, Warszawa.

Standing, G. (2014b). Understanding the Precariat through Labour and Work. Development & Change, 45 (5), 963––980, https://doi.org/10.1111/dech.12120

Tetlow, G. (2017). Basic Income: And How We Can Make It Happen, by Guy Standing. Retrieved from https://www.ft.com/content/ccc8ff92-7083-11e7-93ff-99f383b09ff9 [accessed: 31.07.2017].

Zirgulis, A., Šarapovas, T. (2017). Impact of Corporate Taxation on Unemployment. Journal of Business Economics and Management, 18 (3), 412–426, https://doi.org/10.3846/16111699.2016.1278400

WPŁYW KONSOLIDACJI PRZEDSIĘBIORSTW NA ZJAWISKO PREKARIATU W POLSCE

STRESZCZENIE

Celem artykułu jest prezentacja badań na temat konsolidacji przedsiębiorstw, zwłaszcza tych funkcjonujących w sektorze prywatnym. W opracowaniu zastosowano metodę analizy porównawczej i syntezy wyników badań własnych, co pozwoliło na udowodnienie prawdziwości hipotezy, iż konsolidacja badanych przedsiębiorstw funkcjonujących w sektorze prywatnym powoduje stopniowe zmniejszanie się zjawiska prekariatu głównie (lub m.in.) dzięki wzrostowi liczby pracowniczych umów o pracę na czas nieokreślony. Autorka osobiście przeprowadziła wywiady telefoniczne z menedżerami różnej wielkości firm. Badaniom poddano 1000 podmiotów gospodarczych z Polski, w tym: 550 mikroprzedsiębiorstw, 280 małych firm, 120 średniej wielkości podmiotów gospodarczych oraz 50 dużych przedsiębiorstw, które w latach 2005–2018 uległy przekształceniu w wyniku procesów konsolidacyjnych (fuzji bądź przejęć). Wywiady były typu swobodnego.

Słowa kluczowe: prekariat, konsolidacja przedsiębiorstw, sektor prywatny, Polska

PROPERTY TAX POLICY OF RURAL AND URBAN-RURAL MUNICIPALITIES IN POLAND

Paweł Felis[1✉], Henryk Rosłaniec[2], Joanna Szlęzak-Matusewicz[1]

[1] SGH Warsaw School of Economics
[2] University of Economic and Human Sciences in Warsaw

ABSTRACT

The article presents research on the local property tax policy of rural and urban-rural municipalities in Poland. Various methods were used to investigate the data interdependencies of mathematical statistics (Pearson's correlation test, Spearman's correlation test and Pearson's independence test). For direct data and coefficients, Pearson's classic correlation was used. With regard to the processed, dichotomic and enumerated data (including the contingency tables), Spearman's rank correlation was used. The study showed that the tax policy of the analysed municipalities was differentiated and could, under certain conditions, give rise to a positive upward tendency of incomes generated in property tax – which should be seen as an original contribution of work from the authors of this article.

Key words: tax policy, property tax, lowering of tax rates, rural municipalities, urban-rural municipalities

JEL codes: E62, H71

INTRODUCTION

Property tax is one of the most important and fiscally efficient local taxes. Local entities can use it to conduct their own tax policy. The tax authority in the area of property tax is reflected primarily in the reduction and differentiation of tax rates and topical exemptions (additional to those introduced by law on local taxes and charges [1991 Law on local taxes and charges]). The article attempts to examine the fiscal implications of tax authority decisions in relation to this tax. In order to grasp the impact of the tax policy of municipalities on the size of the funds gained from the property tax, the analysis covered the period 2007––2017. It refers to the data from all rural and urban-rural municipalities in Poland. In 2017, an amount of PLN 21,828.97 million in property taxes fed the budget of

total municipalities, of which just over 45% concerned rural and urban-rural municipalities.

The article attempts to answer two research questions:
– What is the impact of the reductions in property tax rates on the size of the budget revenue of rural and urban-rural municipalities?
– How diverse is the tax policy of these entities in relation to the category of taxpayer?

THEORETICAL BASIS

Globally, research on local tax policies focuses mainly on the motives of the tax policy decisions taken by local authorities (e.g. the concept of an average voter[1]; dependence of tax policy on the political cycle[2]; party

Paweł Felis https://orcid.org/0000-0002-2072-7245; Henryk Rosłaniec https://orcid.org/0000-0002-4592-8289; Joanna Szlęzak--Matusewicz https://orcid.org/0000-0003-2017-9434

✉pfelis@sgh.waw.pl

model and the model of environmental diversification of tax policies[3]; tax competition[4]). In most cases, the local tax policy is based on real property tax.

The local tax policy also depends on the degree of decentralization and the scope of functions entrusted to municipalities. An interesting study was conducted by Swianiewicz [2014] defining the types of local authorities in Eastern Europe. It turned out that Poland, along with countries like Hungary and Slovakia, belongs to the so-called champions of decentralization, which are characterized by a high degree of financial autonomy resulting from the right to decide on local tax rates or freedom to finance investment projects.

When assessing the revenue autonomy of municipalities in Poland, it should be borne in mind that due to the complexity of legal, socio-economic or political processes, it is difficult to clearly identify the framework and criteria defining the actual autonomy in pursuing financial policy. The autonomy of local government units is dependent on numerous interconnected factors of a social, economic, spatial and territorial character. In their research of this area, Brzozowska and Kogut-Jaworska [2016] concluded that changes in the formation of basic figures characterising the revenue autonomy of local government units indicate that in recent years, the process of improving the financial autonomy of municipalities has been under way. There has been a rise in income, including their own income. At the same time, both revenues from local taxes and taxes from the state budget have been on the rise. In parallel, an explicit improvement is observed in the level of financial autonomy indicators for urban and rural municipalities. Real property tax takes a permanent and significant place in their budgets.

The most comprehensive tax policy research of local governments in Poland was conducted by Łukomska and Swianiewicz [2015]. They investi-gated, for instance, motives and behaviour of municipal authorities in the imposition of local taxes, referring to the cited theoretical concepts of local tax policies.

The literature insufficiently undertakes detailed research on specific categories of municipalities, as for example in this article, the rural municipalities. The topic has recently been handled among other authors by Felis, Rosłaniec and Szlęzak-Matusewicz, but their studies concern only agricultural tax. Their conclusions are:

– Agricultural tax for many rural municipalities is an important source of income, and their contingency depends on the price of rye which determines the rates [Felis et al. 2018b];
– The smaller the share of agricultural tax in wealth taxes, the more effective the tax policy. The reduction in the agricultural tax rate correlates positively with the increase in the income from agricultural tax in the current year, and also in the next year, though less [Felis et al. 2018a].

MATERIAL AND METHODOLOGY OF RESEARCH

The local tax policy research on property tax makes use of official data from the Rb-27s reports on the implementation of the budget revenue plan of the local government units. The following items are crucial for the analysis and conclusions: total revenue[5] (also as section 756), income from wealth taxes[6] and from property tax.

The analysis of the effectiveness of the tax policy of rural and urban-rural municipalities uses different methods to examine the interdependencies of mathematical statistics data (Pearson's correlation test, Spearman's correlation test and Pearson's independence test). For direct (numerical) data and coefficients

---

[1] Research conducted by Downs [1957].

[2] Research conducted by Mouritzen [1989].

[3] See e.g. Sharpe and Newton [1984].

[4] A summary of international research within the mainstream research on tax competition at a local level can be found in two publications: Blöchliger [2013] as well as Blöchliger and Pinero-Campos [2011].

[5] Incomes from property taxes, tax on civil law activities, inheritance and gift tax, tax card, shares in taxes from state budget income, various local charges.

[6] Incomes from property tax, agricultural tax, forestry tax and transport tax.

(numerical measures of relative growth), Pearson's classic correlation (r) is used to measure the strength of the linear dependence of the variables tested. For processed, dichotomic and enumerated data (including contingency tables), Spearman's rank correlation test (ρ) is used. The contingency tables are also analysed by Pearson's independence test (χ^2), which can indicate data dependence even if the data are not linearly dependent or even non-monotonic. The analysis is carried out for aggregated cross-sectional time data: for voivodships (16), and the years 2007–2017 (11). The main variables in the analysis of the tax policy of municipalities are d1UD (the growth in the share of the amounts resulting from the reduction in the upper tax rates in tax revenues, expressed in %) and d2D (a variable growth showing a relative tax income growth, expressed in %). Tax policy is understood as a possible "positive" effect of variable d1UD in a particular year on d2D variable in the next year. It is easy to guess that the correlation of d1UD in a particular year with d2D in the same year is negative – larger reductions in tax rates result in lower tax incomes. However, a positive correlation of d1UD in a particular year with d2D in the following year would be a certain indication of the effectiveness of lowering tax rates as an instrument of tax policy.

RESULTS AND DISCUSSION

Property tax is the most important source of income of municipalities in local taxes. In the years 2007––2017, it amounted in urban-rural municipalities on average to almost 84% of local tax revenues with the active authority of municipalities and almost 75% in rural municipalities. With regard to the total tax incomes, these relations are, respectively, about 37.5% for urban-rural municipalities and 35.5% for rural municipalities. In order to illustrate the degree of use of municipality competence in the development of property tax revenues, a comparison was made of the fiscal effects of the reduction in rates with income earned from this tax (Tables 1–3). The relation of these figures shows what could be the relative in-

Table 1. Effects of the reduction in property tax rates in the period of 2007–2017

Year	Incomes from property tax (million PLN)	Lost incomes due to reduced rates (million PLN)	Lost income/income from property tax (%)
Urban-rural municipalities			
2007	2 725.78	508.56	18.66
2008	2 883.80	494.04	17.13
2009	3 092.29	531.54	17.19
2010	3 284.53	629.49	19.17
2011	3 552.22	697.30	19.63
2012	3 867.78	688.05	17.79
2013	4 140.79	779.48	18.82
2014	4 314.91	802.76	18.60
2015	4 520.67	904.51	20.01
2016	4 643.27	707.97	15.25
2017	4 968.77	684.53	13.78
Rural municipalities			
2007	2 626.02	521.80	19.87
2008	2 767.25	523.14	18.90
2009	2 928.54	575.22	19.64
2010	3 148.71	649.75	20.64
2011	3 386.23	740.98	21.88
2012	3 701.09	768.94	20.78
2013	4 042.64	860.88	21.29
2014	4 284.02	927.74	21.66
2015	4 424.37	981.03	22.17
2016	4 592.22	821.71	17.89
2017	4 898.27	802.88	16.39

Source: Authors' own material on the basis of the data in the Rb-27s report.

Table 2. Effects of the reduction in property tax rates in relation to legal persons in the period of 2007–2017

Year	Incomes from property tax (million PLN)	Lost incomes due to reduced rates (million PLN)	Lost income/income from property tax (%)
Urban-rural municipalities			
2007	2 064.04	250.24	12.12
2008	2 157.24	238.82	11.07
2009	2 302.75	256.48	11.14
2010	2 436.94	320.21	13.14
2011	2 632.02	357.90	13.60
2012	2 859.20	351.68	12.30
2013	3 049.86	404.90	13.28
2014	3 168.41	428.13	13.51
2015	3 318.28	506.66	15.27
2016	3 376.17	331.00	9.80
2017	3 635.47	311.43	8.57
Rural municipalities			
2007	1 968.16	219.92	11.17
2008	2 039.67	218.53	10.71
2009	2 134.85	239.41	11.21
2010	2 289.36	276.33	12.07
2011	2 449.21	330.67	13.50
2012	2 656.01	347.64	13.09
2013	2 894.60	398.06	13.75
2014	3 077.61	445.74	14.48
2015	3 159.13	474.19	15.01
2016	3 242.94	328.62	10.13
2017	3 497.58	316.62	9.05

Source: Authors' own material on the basis of the data in the Rb-27s report.

come growth if those competences did not exist or if municipalities did not make use of them. It also reflects the activity of local authorities in the pursuit of tax policy. In the municipalities in question, these indicators are high, averaging over the analysed period: 17.8% in urban-rural municipalities and 20.1% in rural municipalities, with a falling trend observed in the last two years. The data in Tables 2 and 3 indicate that the local tax policy is addressed mainly toward natural persons. The percentage scale of the use of tax authority tools in relation to different categories of taxpayers – the so-called average level of financial prejudice was:
– in urban-rural municipalities, 34% (natural persons) and 12.2% (legal persons);
– in rural municipalities, 40.8% (natural persons) and 12.2% (legal persons).

Subsequently, the authors observed the impact of the increase in the amounts resulting from the reduction in the upper property tax rates (variable d1UD, expressed in %) on the relative growth in income from property tax; naturally, taking into account inflation (variable d1D, expressed in %) and this variable growth (d2D variable, expressed in %). These variables were considered in the subsequent years R and R + 1 – we were mainly interested in variables d1UD, d2D. We considered the impact of variable $d1UD_r$ exerted on $d2D_{R+1}$ as well as the impact $d1UD_R$ on $d1D_R$ and the variable $d1D_{R+1}$. A negative correlation of $d1UD_R$ and $d1D_R$ is natural, as it should be expected that increased tax preferences will trigger a reduction in the revenue growth in the same year. However, there is also a positive correlation of $d1UD_R$ with $d2D_{r+1}$ and, slightly weaker, with

Table 3. Effects of the reduction in property tax rates in relation to natural persons in the period of 2007–2017

Year	Incomes from property tax (million PLN)	Lost incomes due to reduced rates (million PLN)	Lost income/income from property tax (%)
Urban-rural municipalities			
2007	661.73	258.32	39.04
2008	726.56	255.22	35.13
2009	789.54	275.06	34.84
2010	847.59	309.28	36.49
2011	920.20	339.40	36.88
2012	1 008.57	336.70	33.35
2013	1 090.93	374.58	34.34
2014	1 146.50	374.63	32.68
2015	1 202.39	397.86	33.09
2016	1 267.10	376.97	29.75
2017	1 333.30	373.10	27.98
Rural municipalities			
2007	657.86	301.88	45.89
2008	727.58	304.61	41.87
2009	793.69	335.81	42.31
2010	859.35	373.41	43.45
2011	937.02	410.30	43.79
2012	1 045.08	421.30	40.31
2013	1 148.03	462.82	40.31
2014	1 206.41	481.99	39.95
2015	1 265.24	506.84	40.06
2016	1 349.28	493.09	36.54
2017	1 400.69	486.25	34.72

Source: Authors' own material on the basis of the data in the Rb-27s report.

$d1D_{r+1}$, and thus the increase in the amounts due to the reduction in the upper income tax rates positively affects the tendency of property tax collection in the next year. It is illustrated by correlation in Tables 4 and 5. The study included 12 variables:

– $d1D_{R+1}$ – tax income growth in year R + 1, compared to year R;
– $d2D_{R+1}$ – growth of variable $d1D_{R+1}$ in relation to variable $d1D_R$;
– $d1D_R$ – tax income growth in year R, compared to year R – 1;
– $D31w3x_R$ – share of income from property taxes in all wealth taxes, in year R;
– $D31w756_R$ – share of income from property tax in the whole section 756, in year R;
– $U31w3x_R$ – share of tax rate reductions in the property tax in all reductions in wealth taxes, in year R;

– $U31w756_R$ – share of reductions in tax rates in property taxes for all reductions in section 756, in year R;
– $d1U_R$ – growth in tax reductions, in year R, compared to year R – 1;
– UD_R – share of tax reductions in tax collection, year R;
– $d1UD_R$ – variable UD_R growth compared to R – 1;
– $d1D31w756_R$ – variable $D31w756_r$ growth compared to R – 1;
– $d1U31w756_R$ – variable $U31w756_r$ growth compared to R – 1.

Variables 1 and 2 act as dependent variables, as we want to explain what in year R can influence tax income growth in year R + 1. While variables 3–12 act as explanatory variables, they are intended to explain negative or positive responses in tax collection

in future years, depending on the value of these variables in year R.

The aforementioned variables were placed in a cross-sectional time series (voivodeships–years). The data were aggregated in each voivodship and were considered for the selected variables in years 2008–2016, as the calculation of variable values required reference to the values of the variables shifted back by a year (coefficients) and the consideration of variables shifted in time by one year forward. In total, this gave $16 \cdot 9 = 144$ data in the variables considered for rural municipalities and urban-rural municipalities. In the correlation tables, some relevant correlations, described further in the text, are highlighted in grey.

We test the significance of correlation (Pearson's and Spearman's) with a classic test

$$U = \frac{R}{\sqrt{1 - R^2}} \sqrt{n - 2}$$

which has the Student's t-distribution of $n - 2$ degrees of freedom. The significant border correlations r^* (for $n = 144$) are shown in the following statement (in brackets, r^* is given for the single-sided test when the correlation character is known) for a different significance of the test (α):

– $\alpha = 0.10$, $r^* = 0.1376$ ($r^* = 0.1074$);
– $\alpha = 0.05$, $r^* = 0.1637$ ($r^* = 0.1376$);
– $\alpha = 0.01$, $r^* = 0.2140$ ($r^* = 0.1937$);
– $\alpha = 0.001$, $r^* = 0.2714$ ($r^* = 0.2555$).

The most important thing in the explanation of the effect of tax policy is the correlation in the first two lines (columns) of Tables 1–3, because primarily we are interested in the effect of variables in the defined year R on income growth in the year following (R + 1). Aforementioned tables show a significant positive correlation of d1UD in year R with d2D in year R + 1 – this is exactly an indirect indication of the "working" tax policy. And, the negative correlations of d1D in year R with d2D in year R + 1 and d1D31w756 in year R with d2D in year R show "self-limitation" of income growth. If the income in a certain year rises (d1D > 0) or the share of income from property tax in a certain year increases (d1D31w756 > 0), then the

income growth tendency (d2D) in year R + 1 will deteriorate – hence the term "self-limitation".

In order to qualitatively examine the dependence: "higher reductions in a particular year imply an increased inclination towards a positive tendency in tax collection in the following year", variables d1UD and d2D were processed into dichotomic variables D and U. If d1UD > 0 (the share of reductions in implemented incomes grows), then we assume U = 1, and otherwise we assume U = 0. Identically for variable d2D – if d2D > 0 (positive tendency to tax collection growth), we assume D = 1, and otherwise we assume D = 0. We consider variables U and D in each year in which we knew d1UD and d2D. Then the question about the effectiveness of tax policy on property tax turns into a question about the influence of a variable pair of U_{R-1} and U_R on a pair of variables D_r and D_{R+1}. To simplify, these pairs are denoted dU_R and dD_R, and take four possible values: 0 (00), 1 (01), 2 (10), 3 (11). These data are included in Tables 6 and 7. We analyse them with Pearson's independence test to determine whether we can see the dependence dU_R and $dD_{R\ or}$, i.e. whether the behaviour of variable d2D in years R and R + 1 depends on the behaviour of variables d1UD in years R – 1 and R; and so, whether there is a real impact of the tax policy on the application of tax rate reductions.

Spearman's correlation test will show the direction of this dependence, as Pearson's independence test shows the dependence, but does not show any other details of that dependence, apart from measuring the strength of the dependence itself. In the descriptions of the contingency tables: χ means Pearson's independence test value – this test has a χ^2 distribution of 9 degrees of freedom with the table size of 4×4. The likelihood of an incorrect rejection of the hypothesis of independence is denoted by $p\chi$. And t is the value of Spearman's correlation test (with 128 data, this test has a Student's t-distribution of 126 degrees of freedom), and pt is probability of an incorrect rejection of the null hypothesis on no correlation. In general, a small probability p-value (e.g. $p < 0.05$ assumed as standard) indicates a significant variable dependence (in the case of independence test) and an important correlation of variables (in the case of Spearman's correlation test). In addition, in Tables 6 and 7, the higher the test value, the more it would indicate a greater data dependence or a "more"

Table 4. Correlations – rural municipalities, natural persons

	d1D	d2D	d1D	D31w3x	D31w756	U31w3x	U31w756	d1U	UD	d1UD	d1D31w756	d1U31w756
d1D	1.0000	0.7572	0.0483	-0.2401	-0.2157	-0.2382	-0.2056	0.2047	0.2908	0.1077	-0.0252	-0.3620
d2D	0.7572	1.0000	-0.6158	-0.0007	-0.0051	0.0503	0.0005	0.0778	0.0778	0.3238	-0.1317	-0.1674
d1D	0.0483	-0.6158	1.0000	-0.2885	-0.2525	-0.3644	-0.2487	0.1280	0.2318	-0.3653	0.1711	-0.1805
D31w3x	-0.2401	-0.0007	-0.2885	1.0000	0.7135	0.7704	0.6976	-0.1933	-0.5257	0.0296	-0.0311	0.0929
D31w756	-0.2157	-0.0051	-0.2525	0.7135	1.0000	0.6312	0.5717	-0.2006	-0.5711	-0.0099	0.0017	0.0679
U31w3x	-0.2382	0.0503	-0.3644	0.7704	0.6312	1.0000	0.8805	-0.0143	-0.2528	0.2058	0.0690	0.4059
U31w756	-0.2056	0.0005	-0.2487	0.6976	0.5717	0.8805	1.0000	0.0441	-0.0871	0.1830	0.1144	0.3848
d1U	0.2047	0.0778	0.1280	-0.1933	-0.2006	-0.0143	0.0441	1.0000	0.4732	0.7992	0.2826	0.3696
UD	0.2908	0.0778	0.2318	-0.5257	-0.5711	-0.2528	-0.0871	0.4732	1.0000	0.1760	0.1256	-0.0028
d1UD	0.1077	0.3238	-0.3653	0.0296	-0.0099	0.2058	0.1830	0.7992	0.1760	1.0000	0.1827	0.5047
d1D31w756	-0.0252	-0.1317	0.1711	-0.0311	0.0017	0.0690	0.1144	0.2826	0.1256	0.1827	1.0000	0.2607
d1U31w756	-0.3620	-0.1674	-0.1805	0.0929	0.0679	0.4059	0.3848	0.3696	-0.0028	0.5047	0.2607	1.0000

Source: Authors' own material on the basis of the data the in Rb-27's report.

Table 5. Correlations – urban-rural municipalities, natural persons

	d1D	d2D	d1D	D31w3x	D31w756	U31w3x	U31w756	d1U	UD	d1UD	d1D31w756	d1U31w756
d1D	1.0000	0.7383	-0.0482	-0.1897	-0.0459	-0.1882	-0.1575	0.0617	0.1648	0.0594	-0.1593	-0.2475
d2D	0.7383	1.0000	-0.7092	-0.0696	-0.0640	-0.0400	-0.0492	-0.0962	0.0522	0.1327	-0.3591	-0.2244
d1D	-0.0482	-0.7092	1.0000	-0.0952	0.0469	-0.1375	-0.0918	0.2069	0.0949	-0.1344	0.3653	0.0736
D31w3x	-0.1897	-0.0696	-0.0952	1.0000	0.2076	0.6781	0.4935	-0.0428	-0.4479	0.0370	0.0276	0.1428
D31w756	-0.0459	-0.0640	0.0469	0.2076	1.0000	0.4464	0.3739	0.0738	-0.1740	0.0463	0.0954	0.1302
U31w3x	-0.1882	-0.0400	-0.1375	0.6781	0.4464	1.0000	0.6419	0.1737	-0.1803	0.2467	0.0478	0.4086
U31w756	-0.1575	-0.0492	-0.0918	0.4935	0.3739	0.6419	1.0000	0.1520	0.0444	0.1998	0.0643	0.4051
d1U	0.0617	-0.0962	0.2069	-0.0428	0.0738	0.1737	0.1520	1.0000	0.3627	0.9063	0.2158	0.3446
UD	0.1648	0.0522	0.0949	-0.4479	-0.1740	-0.1803	0.0444	0.3627	1.0000	0.2309	0.0154	-0.0191
d1UD	0.0594	0.1327	-0.1344	0.0370	0.0463	0.2467	0.1998	0.9063	0.2309	1.0000	0.1058	0.3810
d1D31w756	-0.1593	-0.3591	0.3653	0.0276	0.0954	0.0478	0.0643	0.2158	0.0154	0.1058	1.0000	0.2067
d1U31w756	-0.2475	-0.2244	0.0736	0.1428	0.1302	0.4086	0.4051	0.3446	-0.0191	0.3810	0.2067	1.0000

Source: Authors' own material on the basis of the data in the Rb-27's report.

non-null ("more" significant) correlation (Spearman's) between the analysed data. Pearson's independence test and Spearman's correlation test are formally distinct but refer to the same issue – the "dependence" of enumerated variables, dD and dU, considered in these tables.

For rural municipalities (Table 6) the visible dependence of dD on dU is very significant – the indication of both Pearson's independence test and Spearman's correlation test is identical. Additional information is a positive Spearman's correlation sign, indicating the dependence: "larger dU occur together with larger dD" – so, higher tax rate reductions positively affect the tax collection tendency in the next year, and that is what the tax policy is about, if it is supposed to make any sense. A similar, albeit weaker, dependence exists in the case urban-rural municipalities (Table 7). A tendency, which is uniform and conspicuous, is the one of "self-limitation" of the income growth of municipalities from property tax; variable d1D in a particular year, strongly negatively correlates with variable d2D in the following year. If there is a strong income growth in a year, the tendency towards a further growth is on the decline in the following year, and if revenues fall, a possibility of increasing revenue growth seems to "open" in the next year. This "self-limitation" is a negative feedback stopping the income cascade growth. A similar conclusion can be drawn from the negative correlation of d1D31w756 in a particular year with the variable d2D in the following year – if the share of tax revenues throughout the section 756 rises, then in the next year the income upward tendency is reduced.

Table 6. Pearson's independence test and Spearman's correlation test – all the voivodships, rural municipalities, natural persons ($\chi = 35.989$, $p\chi = 0.00004$, $\rho = 0.2334$, $t = 2.6945$, $pt = 0.0080$)

dD-dU	0	1	2	3
0	13	10	4	2
1	9	16	4	8
2	18	4	17	2
3	3	3	8	7

Source: Authors' own material on the basis of the data in the Rb-27s report.

Table 7. Pearson's independence test and Spearman's correlation test – all the voivodships, urban-rural municipalities, natural persons ($\chi = 21.598$, $p\chi = 0.0102$, $\rho = 0.1428$, $t = 1.6193$, $pt = 0.1079$)

dD-dU	0	1	2	3
0	16	14	8	5
1	13	10	5	8
2	10	6	17	1
3	4	3	3	5

Source: Authors' own material on the basis of the data in the Rb-27s report.

SUMMARY

Property tax is a very important category of municipality income sources, i.e. incomes that determine the financial autonomy of the municipality self-government. As shown in the article, the tax policy of rural and urban-rural municipalities is mainly implemented by lowering the upper tax rates. It undoubtedly affects the volume of incomes of municipalities. However, the effects in various periods were different. In the period in which the tax rates were reduced, tax revenues usually declined. And, in a later period, an upward tendency was observed in the created correlation tables. For rural municipalities, in the case of policies implemented towards natural persons, such a dependence (efficiency) is clear: and existent in the case of rural and urban-rural municipalities, but weaker. The analysed municipalities (rural and urban-rural), when lowering tax rates, conducted an active tax policy, intending to stimulate the development of the local economy. Tax policy is to a certain extent dependent on the taxpayer's category. Municipalities implemented a more active tax policy towards natural persons. This may have been due to the fact that the property tax incomes from legal persons are much higher than those from natural persons. But an external parameter must not be omitted, it is independent of municipalities, i.e. a large variation in tax rates between housing and commercial property, which the legislator has adopted, to the disadvantage of commercial properties. Let us add that the incomes from natural persons do not relate

only to residential immovable property but also to commercial property. And this is where small companies run by natural persons would be tax policy beneficiaries. However, the order of magnitude cannot be precisely determined, since the reports on the implementation of the municipality budgets do not give a possibility of obtaining accurate information on the amount of income from particular types of property.

REFERENCES

Blöchliger, H. (2013). Fiscal Federalism 2014: Making decentralization work. OECD Publishing, Paris.

Blöchliger, H., Pinero-Campos, J. (2011). Tax Competition Between Sub-Central Governments, OECD Working Papers on Fiscal Federalism, 13, http://dx.doi.org/10.1787/5k97b1120t6b-en

Brzozowska, K., Kogut-Jaworska, M. (2016). Władztwo podatkowe w ocenie samodzielności dochodowej gmin w Polsce. Annales Universitatis Mariae Curie-Skłodowska Lublin – Polonia. Sectio H, 50 (1), 327–337.

Downs, A. (1957). An Economic Theory of Democracy. Harper & Row, New York.

Felis, P., Rosłaniec, H., Szlęzak-Matusewicz, J. (2018a). Wykorzystanie podatku rolnego w polityce podatkowej gmin wiejskich. Prace Naukowe Uniwersytetu Ekonomicznego we Wrocławiu, 532, 106–115, https://doi.org/10.15611/pn.2018.532.10

Felis, P., Szlęzak-Matusewicz, J., Rosłaniec, H. (2018b). Relevance of agricultural land tax for own revenue of rural municipalities in Poland. Acta Sci. Pol. Oeconomia, 17 (2), 49–58, https://doi.org/10.22630/ASPE.2018.17.2.20

Łukomska, J., Swianiewicz, P. (2015). Polityka podatkowa władz lokalnych w Polsce. Municipium, Warszawa.

Mouritzen, P.E. (1989). The Local Political Business Cycle. Scandinavian Political Studies, 12 (1), 37–54, https://doi.org/10.1111/j.1467-9477.1989.tb00080.x

Sharpe, L.J., Newton, K. (1984). Does Politics Matter? The Determinants of Public Policy. Oxford University Press, New York.

Swianiewicz, P. (2014). An Empirical Typology of Local Government Systems in Eastern Europe. Local Government Studies, 40 (2), 292–311, https://doi.org/10.1080/03003930.2013.807807

Ustawa z dnia 12 stycznia 1991 r. o podatkach i opłatach lokalnych. Dz.U. 2018, poz. 1445 z poźn. zm. [Law of 12 January 1991 on local taxes and charges. Journal of Laws of 2018, item 1445, as later amended].

POLITYKA PODATKOWA GMIN WIEJSKICH I MIEJSKO-WIEJSKICH W ZAKRESIE PODATKU OD NIERUCHOMOŚCI

STRESZCZENIE

W artykule zaprezentowano badanie lokalnej polityki podatkowej gmin wiejskich i miejsko-wiejskich w zakresie podatku od nieruchomości. Wykorzystano różne metody badania współzależności danych statystyki matematycznej (test korelacji Pearsona, test korelacji Spearmana oraz test niezależności Pearsona). Badanie wykazało, że polityka podatkowa badanych gmin była zróżnicowana i mogła w określonych warunkach dać efekt pozytywny w postaci tendencji wzrostowej dla dochodów wykonanych w podatku od nieruchomości – co należy postrzegać jako oryginalny wkład pracy autorów artykułu.

Słowa kluczowe: polityka podatkowa, podatek od nieruchomości, obniżanie stawek podatkowych, gminy wiejskie, gminy miejsko-wiejskie

FOOD SAFETY IN THE SUPPLY CHAIN USING BLOCKCHAIN TECHNOLOGY

Sławomir Jarka✉

Warsaw University of Life Sciences – SGGW

ABSTRACT

The purpose of the article is to determine the importance of blockchain technology in food supply chain management. A practical reference to the adopted research aim was to indicate the usefulness of blockchain technology to build trust between food chain stakeholders. Research shows that the properties of blockchain technology can enable it to solve many problems and shortcomings of the current food production system. Its added value is primarily a significant increase in transparency of operations among all stakeholders using big data in all parts of the food chain.

Key words: food safety, blockchain technology, digitization in agriculture

JEL codes: D19, Q16, Q19

INTRODUCTION

Contemporary food supply chains include producers, suppliers, carriers, wholesalers, retailers, other intermediaries and even the customers themselves. They consist of many very diverse stakeholders, striving to achieve their autonomous goals. Managing them in a classical way often becomes an inefficient process, and even impossible, especially when considering the development of globalization. It is growing globalization that makes enterprises need new methods and solutions to improve the management of often dispersed resources. They can also be an important source of competitive advantage for food producers in Europe [Kowalczyk 2012]. The European agricultural model is undergoing transformation to reach a good competitive position in the global market. Its high placement in ranking can be demonstrated by the growing dynamics

of Polish food exports, which has reached the value of 107% [GUS 2019].

One of the areas to improve the competitiveness of food on the world market is its quality, achieved, among other things, by improving the supply chain. As Osmólski and Koliński indicate [2019], the supply chain is a series of independent, discrete, largely autonomous events controlled by marketing, production and distribution activities. Nowadays, the digitization of these processes is observed in enterprises as a result of the development of technology and the accompanying infrastructure. Digitalization of the economy is one of the most dynamic changes of our time, which opens new possibilities in creating business models. At the same time, it brings uncertainty and various types of threats related, among other things, to the social effects of manufacturing process automation or broadly understood food safety [Łobejko 2018].

Sławomir Jarka https://orcid.org/0000-0003-0369-9905

✉slawomir_jarka@sggw.pl

Figure 1 presents four levers of the digital transformation process: digital data, automation, connectivity, digital customer access. The response to the challenges associated with the rapid development of digital technologies is the digital transformation of various spheres of economic activity (Fig. 1). Digital transformation is a special kind of organizational change in an enterprise, sector, supply chain, and modern food safety systems. The availability of digital data, the automation of production processes, the interconnection of value chains and the creation of digital customer interfaces is transforming business models and reorganizing entire industries [Berger 2015].

Blockchain technology is particularly important in the supply chain control process. Blockchain technology is recognized as one of the breakthroughs of information technologies of our time [Treiblmaier 2018]. Its attributes and importance in building food safety systems are presented in the last part of the article.

MATERIAL AND METHODS

The purpose of this article was to determine the importance of blockchain technology in the chain management of food supply in the era of network economy development, known as Industry 4.0. Indication,
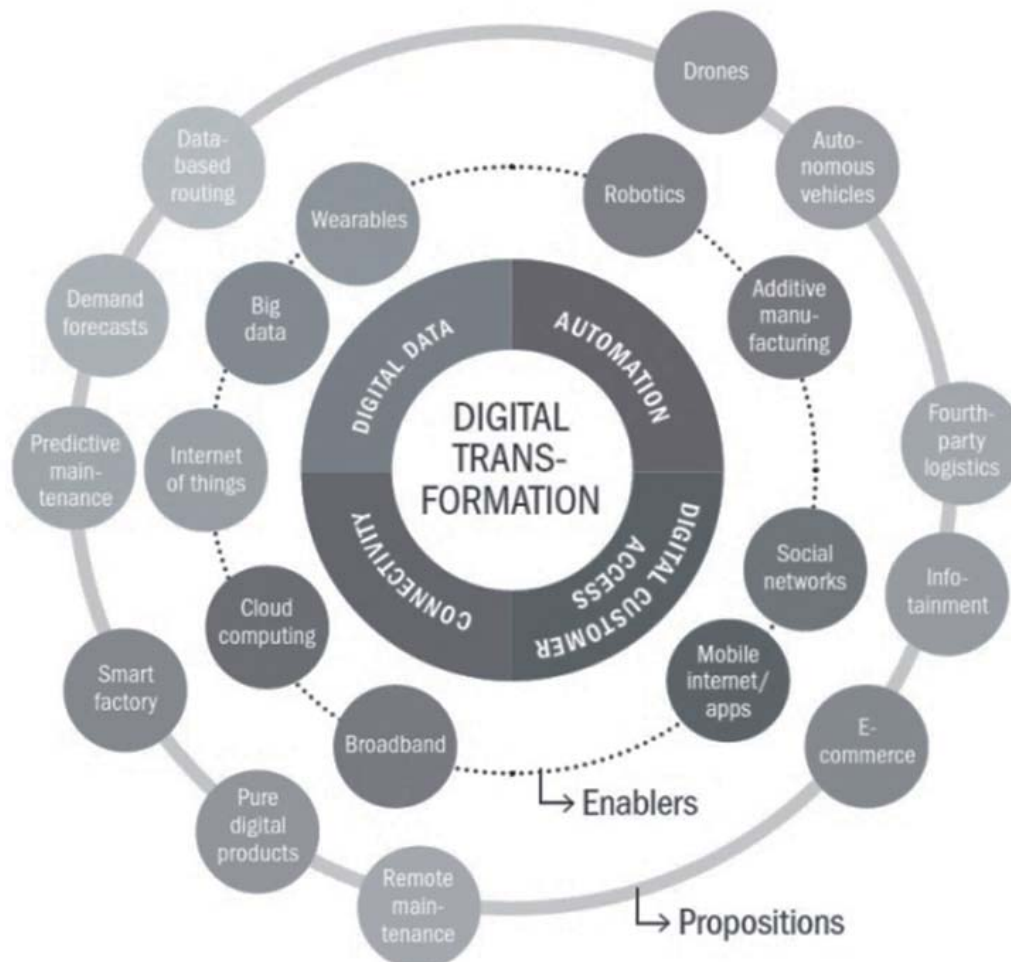
Fig. 1. Drivers of digitization

Source: Own elaboration based on Berger [2015].

which is based on the literature research of the impact of digital technology development on the security of the food chain.

Currently, food supply chains are changing very dynamically, but require permanent control [Osmólski and Koliński 2019] so that they do not become a source of danger for consumers. According to Szymczak and Sadowski [2019], there are still many crops and herds of animals exposed to diseases that can directly threaten the health or life of consumers. The sphere of food safety concerns not only threats of a biological nature, but also of an economic nature [Karasiewicz 2001]. A holistic approach to food safety issues has been included in the 2006 Act on Food Safety and Nutrition. In this sense, it means "all conditions, in particular: the substances and flavours used, levels of contaminants, pesticide residues, food irradiation conditions, organoleptic characteristics and actions that must be taken at all stages of food production or marketing – to ensure health and human life" [2006 Act on Food Safety and Nutrition]. The legislation also indicates the need to protect consumers against financial fraud that may occur when buying food. Therefore, actions are taken to improve the conditions of food availability and its health, using the potential of digital technologies [Kondo 2014].

It should be emphasized that the food supply chain is particularly exposed to all kinds of threats, which is a critical element of the functioning of society in each country [Kowalczyk 2017]. The most important problems in the food value chain include [Michalczyk 2019]:

– fraud in the trading of food, providing false information about the producer and the technological process of food production;
– illegal production and marketing of food without proper documentation;
– food-borne diseases;
– costs of withdrawing from market circulation any food that does not meet legally regulated requirements in a given country.

Figure 2 shows the food supply chain traceability system in force in Poland. Its basic feature is the current centralization. In this system, stakeholders rely on government supervision centres as a source of reliable information in food trading. This system is powered by data provided by individual stakeholders. At the same time, they have access to processed information and important messages, alerts that are announced in advance when a threat or potential crisis in the area of food safety is detected.
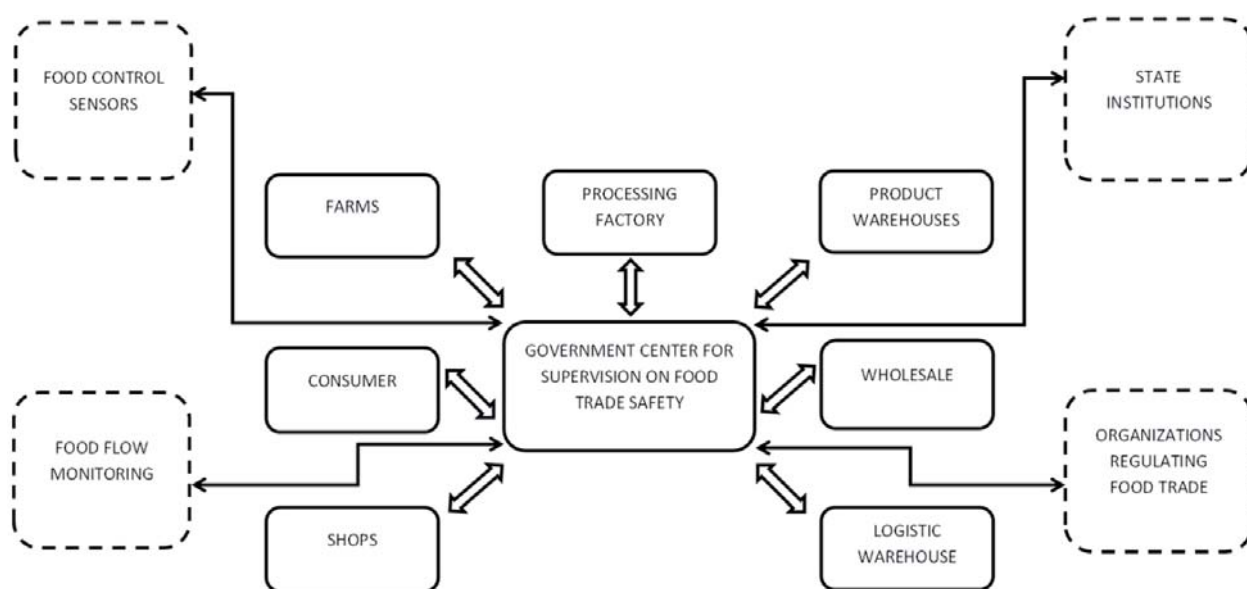

Fig. 2. Centralized traceability system for the food supply chain

Source: Own study.

It would seem that the centralized system correctly identifies the occurrence of any potential irregularities and threats in the food value chain, in all its links. However, the potential threat is always identified as soon as it occurs, which is a significant disadvantage of this system and exposes potential beneficiaries to negative effects. A given food product can go even through 5 to 10 stages of the food chain, from the farm (and even from the supplier of inputs, breeding animals and other components subject to further processing) to the end consumer [Juchniewicz 2015]. It should be noted that the majority of this turnover relates to cells falling within the scope of B2B units, i.e. appropriately structured and having appropriate resources that can be used to actively coordinate the food chain in accordance with safety regulations. According to Osmólski and Koliński [2019], the biggest downside to this centralized system of identifying the food supply chain is that it is monopolistic, not very transparent and finally, asymmetrical in the information flow. These serious imperfections of the existing system often lead to problems with the lack of trust of individual participants in the chain, or such prosaic irregularities as surprising as:

– falsifying certificates of origin of animals intended for further breeding or sent to a slaughterhouse;
– manipulation of information on the use of sensitive means of production, e.g. in animal production – antibiotics and other drugs, and in plant production – pesticides, in food processing – preservatives, etc.

For this reason, there is a need to implement new solutions using digital technologies to build a more decentralized system that will eliminate most of the negative attributes of the current one. This concept and the author's experience are presented in the next section of the article.

RESULTS AND DISCUSSION

The problem of food safety in the supply chain is a priority for every country. First of all, it results from the very large role that modern food chains play in the economy and society [Kowalczyk 2017]. This part of the article presents the opportunities and challenges associated with the use of blockchain technology in food supply chains in areas connected to ensuring the safety and quality of food products. In assessing the potential of this technology, both the applications described in the literature and the effects of the selected pilot project, under which block-based solutions and applications were tested, were taken into account.

BLOCKCHAIN TECHNOLOGY

Over 10 years of experience in the use of blockchain technology is inseparably related to the history of the digital currency Bitcoin, created by the mysterious Satoshi Nakamoto. However, the idea of blockchain technology itself was already described in 1991 publication presenting a solution to the world, which was to digitally mark documents, preventing them from being altered or falsified [Haber and Stornetta 1991].

The system presented by scientists used a cryptographically secured block chain to store documents bearing so-called time stamps. In 1992, the so-called Merkle Trees, increased its efficiency and enabled the collection of many documents in one block. However, this technology was ultimately not used by anyone, and the patent itself expired in 2004, i.e. four years before Bitcoin was created. In 2004, world-renowned IT specialist and cryptographer Hal Finney (Harold Thomas Finney II) introduced a system called RPoW, Reusable Proof of Work. The system was based on receiving invariant and/or indestructible Hashcash, and instead created a token signed by the RSA key, which can then be transferred from person to person. Since the first Bitcoin users appeared, there has been an evolution in the perception of blockchain technology itself as a base technology that can be used for more than just creating cryptocurrencies. Also of importance was the appearance of the Bitcoin independent blockchain network called Ethereum, designed by Vitalik Buterin, which offered new functional possibilities – intelligent contracts [Buterin 2014].

Blockchain – a block chain – is a distributed database operating in a set of interrelated nodes (users) in which information (records) about various types of transactions and operations can be registered and stored [Crosby et al. 2015]. Blockchain technology creates, in fact, a digital book that records economic events, or rather individual operations throughout the

entire market chain. The information of the transaction is stored in chronological order and made available to individual stakeholders.

In blockchain technology, each block is connected to the previous one using a hash (link to the previous block), and a time stamp (time stamp), which defines the time of creation of the shortcut [Treiblmaier 2018]. Blockchain is a differently distributed, collective database, enabling their collection and communication by registering information through computers belonging to the same network. In contrast, the very innovation of blockchain technology relates to the combination of various fields: software engineering, distribution computer science, cryptographic science and economic game theory [Kisielnicki 2018].

Thus, blockchain technology basically creates a digital recording book. Each transaction information is stored in chronological order and made available to participating entities. Each transaction placed in the book is verified by system participants. A single transaction is a block, and a series of recorded transactions form an inseparable block chain. When you place information in a block chain, it becomes indelible [Steiner et al. 2017]. This is due to the fact that each block contains the end of the previous block, thus enabling them to be combined into a blockchain [Swan 2015].

The process of registering and validating transactions takes place without involving parties or third parties. Nodes validating blocks must find proof of work, i.e. solve the equation whose difficulty is regulated by the adopted algorithm. Thanks to these solutions, blockchain technology ensures security of data transmission as well as reliability and correctness of data. Each transaction and its associated value is visible to everyone who has access to the system.

BLOCKCHAIN TECHNOLOGY IN THE FOOD SUPPLY CHAIN

The presented analysis shows that the increased demand for transparency in the food supply chain causes an increase in the interest of modern digital solutions, such as blockchain technology. Figure 3 presents the concept of using blockchain in the process of building food safety. Due to the methodological limitations and practical experience of the author, the focus has been on the proposed solution. First of all, attention is paid to preventive measures consisting in eliminating the symptoms of problem situations in the link in the chain in which they were detected. In this way, it limits the development of problem situations in the entire food market chain. The presented system is decentralized and is based on sharing data from all partners of the food value chain, collected in the digital book (ledger). In the case of animal production, this knowledge may relate to such parameters as:

- accepting the animal to blockchain records along with the opening balance;
- installation of responders on animals, enabling monitoring of their activity;
- body temperature anomaly or behavioural changes;
- treatment ordered;
- stages of the food cycle;
- readiness to receive by the meat processing plant after obtaining appropriate technological maturity;
- scope of preventive measures and substances used throughout the entire animal husbandry period;
- drawing up a description of the animal's silhouette and coding it in the form of a QR code.

The scope of these parameters was determined after consultation with partners from the Allflex company, which provides specialized "hardware" solutions (Fig. 3). Thanks to the decentralization of the food chain management process, all stakeholders (with access to the Internet) have the opportunity to observe changes in the food production process in real time. Blockchain technology allows a person to reflect in real time on the parameters that occur in food production. Of course, people can also proceed at further stages of the food chain, i.e. at the stage of transporting animals (including other food raw materials or products), at the stage of the food industry, at the stage of storage and distribution of food products. The final recipient will, of course, be the consumer, gaining knowledge about the parameters that have been registered in individual links of the chain. In this way, lasting relationships with consumers and the image of products distinguished by means of a brand are built. The author presented an opinion on this topic during a meeting in April 2019 at the Singapore Food Agency. The meeting concerned the possibility of exporting
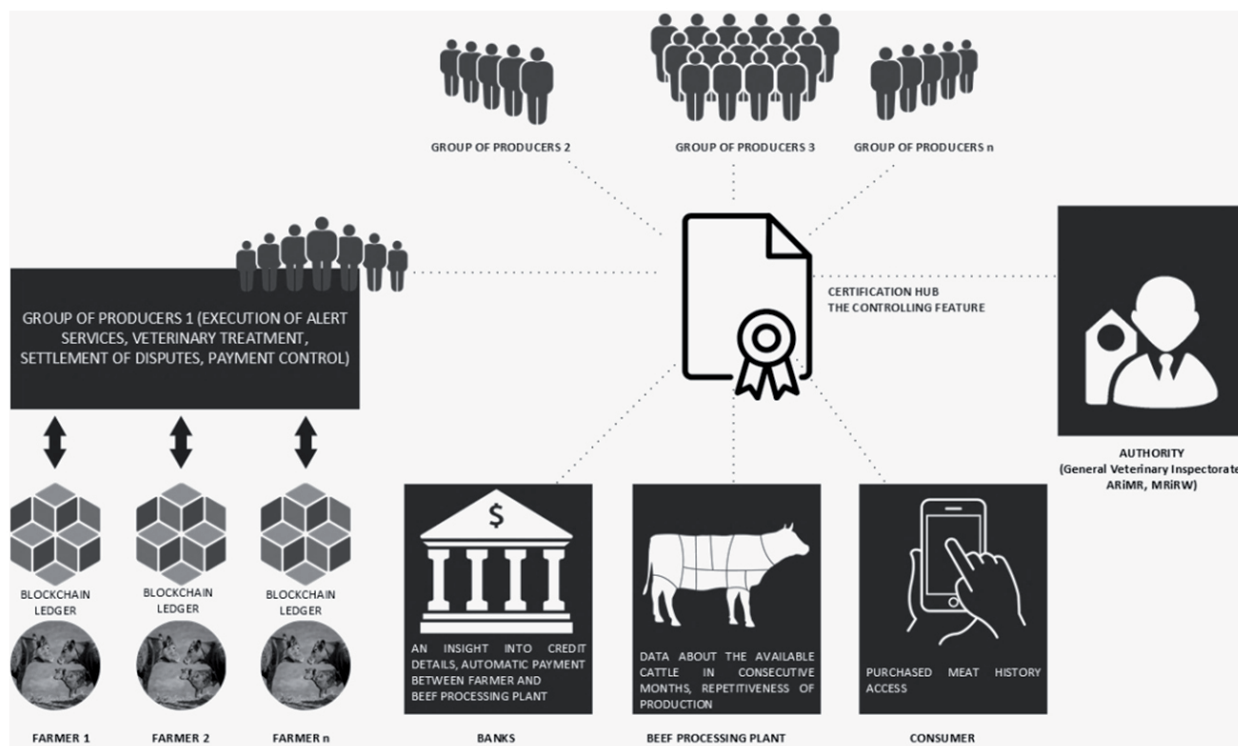
Fig. 3. The concept of building blockchain in the supply chain

Source: Own study.

Polish beef produced using blockchain technology to this demanding market.

It is also worth paying attention to the verification stage of parameters recorded during animal husbandry. The recipients of these parameters are, of course, farmers who cooperate within the groups of agricultural producers. It is very important to make the assumption that blockchain is implemented on farms associated in a producer group.

Farmers in the food chain are trading partners of consolidated customers, much larger and economically stronger, as well as better organized. In the relationship between producers, their suppliers and customers, farmers (next to consumers) are the weakest link. The low bargaining power of agricultural producers is mainly manifested by a small share in the final price of products [Milczarek-Andrzejewska 2014].

It seems that a good way to reduce the imbalance in market forces at the level of agricultural producer and subsequent links in the chain is to increase the eco-nomic strength of farms through horizontal integration [Chlebicka 2017]. Horizontal integration can take the form of agricultural producer groups or producer organizations. Cooperation in groups enables, among others things, concentration of supply, joint production planning, concentration of demand for means of production, negotiating sales/purchase conditions, gaining new sales markets, activities for improving the quality of manufactured products, creating and promoting own product brands. Thanks to the existence of producer groups, links between producers, processors and trading agents, which are important for the smooth functioning of the market, are created, which contributes to supply planning and price stabilization (Fig. 3). Membership in agricultural producer groups can bring a number of benefits to agricultural producers – members. Those most frequently mentioned include improving the income situation of producers, increasing the quality of manufactured products and access to new markets. In this way, the use of block-

chain contributes to the level of economic security for all stakeholders in the food chain.

CONCLUSIONS, LIMITATIONS AND FURTHER RESEARCH

In addition to the many opportunities and possible scenarios associated with the use of blockchain, there are also problems and barriers that may limit a wider use of this technology in the food chain [Gajewski et al. 2017]. One barrier to the implementation of blockchain technology in food chain management processes may be insufficient resources and financial means necessary to undertake the required investments, e.g. on farms of agricultural producers. Some farmers may use their computer infrastructure with access to the Internet, which of course will reduce the level of investment required. However, operating costs include the purchase of sensors that will be installed on animals, which of course would also be another cost item.

An important problem from the point of view of shaping the effectiveness of the entire group of agricultural producers producing food is the problem of cooperation of all stakeholders [Jarka and Ruciński 2016]. Further research should concern the effects of implementing blockchain technology in agricultural enterprises differing in the scale of their operations.

The aim of the study was to present the possibilities of using innovative blockchain technology to improve the functioning of the food chain. Research shows that the properties of blockchain technology mean that it can solve many problems and shortcomings of the current food production system. Its added value is primarily a significant increase in transparency of operations among all stakeholders using big data in all parts of the food chain.

It is worth emphasizing that by using blockchain technology in the food chain, we can be sure that none of the characteristics of the product (certificate of origin, obtained certificates, etc.) can be reproduced. Most importantly, there are no information gaps, e.g. related to monitored features in animal production. This is possible thanks to responders that operate throughout the entire animal husbandry process. Its added value is primarily a significant increase in transparency of operations among all stakeholders using big data in all parts of the food chain.

REFERENCES

Berger, R. (2015). The digital transformation of industry. Roland Berger, BDI, Munich. Retrieved from https://www.rolandberger.com/media/pdf/Roland_Berger_digital_transformation_of_industry_20150315.pdf [accessed: 14.12.2019].

Buterin, V. (2014). A next-generation smart contract and decentralized application platform. Ethereum White Paper.

Chlebicka, A. (2017). Organizacje producenckie we Wspólnej Polityce Rolnej – przesłanki tworzenia i ewolucja wsparcia [Producer organisations in the Common Agricultural Policy – premises for creating and evolution of support]. In: A. Chlebicka (Ed.) Integracja europejska jako determinanta polityki wiejskiej: aspekty ekonomiczne. Wydawnictwo Fundacji Programów Pomocy dla Rolnictwa FAPA, Warszawa.

Crosby, M., Nachiappan, Pattanayak, P., Verma, S., Kalyanaraman, V. (2015). Blockhain Technology. Beyond Bitcoin. Sutardja Center for Entrepreneurship & Technology Technical Report. University of California, Berkeley.

Gajewski, J., Paprocki, W., Pieriegud, J. (Eds.) (2016). Cyfryzacja gospodarki i społeczeństwa – szanse i wyzwania dla sektorów infrastrukturalnych [Digitization of the economy and society – opportunities and challenges for infrastructure sectors]. Instytut Badań nad Gospodarką Rynkową, Gdańsk.

GUS (2019). Rocznik Statystyczny Handlu Zagranicznego 2019 [Yearbook Trade of Foreign Statistics of Poland 2019]. Warszawa.

Haber, S., Stornetta, W.S. (1991). How to time-stamp a digital document. Journal of Cryptology, 3 (2), 99–111.

Jarka, S. Ruciński, M. (2016). High Commitment Management a new direction in the management of staff. Wydawnictwo SGGW, Warszawa.

Juchniewicz, M. (2015). Innowacje w logistyce łańcucha dostaw żywności [Innovations in food supply chain logistics]. Zeszyty Naukowe Uniwersytetu Szczecińskiego Problemy Zarządzania, Finansów i Marketingu, 41 (2), 473–482, https://doi.org/10.18276/pzfm.2015.41/2-38

Karasiewicz, G. (2001). Systemy dystrybucji artykułów rolno-spożywczych na rynku polskim. Diagnoza i koncepcja zmian [Distribution of agri-food products on the Polish market. Diagnosis and concept of changes].

Wydawnictwa Naukowe Wydziału Zarządzania UW, Warszawa.

Kisielnicki, J. (2018). Blockchain jako technologia przepływu informacji i wiedzy w zarządzaniu projektami [Blockchain as a technology of information and knowledge flow in project management]. Przegląd Organizacji, 8, 8–13.

Kondo, M. (2014). Opportunities for the Australian beef industry in Asia. Marcus Oldham, 14/04, 1–5.

Kowalczyk, S. (2012). Konsekwencje globalizacji dla rolnictwa europejskiego [The consequences of globalization for European agriculture]. Zeszyty Naukowe Szkoły Głównej Gospodarstwa Wiejskiego w Warszawie. Problemy Rolnictwa Światowego, 12 (1), 113–126.

Kowalczyk, S. (2017). Wolny rynek a bezpieczeństwo żywności w epoce globalizacji [Free market and the food safety in the globalization era]. Roczniki Naukowe Ekonomii, Rolnictwa i Obszarów Wiejskich, 104 (4), 15–27.

Łobejko, S. (2018). Strategie cyfryzacji przedsiębiorstw. Konferencja Innowacje w Zarządzaniu i Inżynierii Produkcji [Enterprise digitization strategies. The Innovation in Management and Production Engineering Conference]. Oficyna Wydawnicza Polskiego Towarzystwa Zarządzania Produkcją, Opole.

Michalczyk, J. (2019). Bezpieczeństwo żywnościowe z perspektywy państw Unii Europejskiej [Food security from the perspective of European Union Member States].

Ekonomia Międzynarodowa, 25, 18–45, https://doi.org/10.18778/2082-4440.25.02

Milczarek-Andrzejewska, D. (2014). Zagadnienie siły w ekonomii – na przykładzie sektora rolno-spożywczego w Polsce [The issue of strength in economics – on the example of the agri-food sector in Poland]. Instytut Rozwoju Wsi i Rolnictwa Polskiej Akademii Nauk, Warszawa.

Osmólski, W., Koliński, A. (2018). Wykorzystanie technologii blockchain w obrocie produktami spożywczymi [Use of blockchain technology in the food trade]. Przemysł Spożywczy, 72 (8), 64–68.

Steiner, J., Baker, J., Wood, G., Meiklejohn, S. (2017). Blockchain: the solution for transparent in product supply chains. Project Provenance White Paper.

Swan, M. (2015). Blockchain. Blueprint for a New Economy. O'Reilly Media.

Szymczak, J. Sadowski, A. (2019). Technologia blockchain jako stymulanta zachowania bezpieczeństwa żywności w łańcuchu dostaw [Blockchain technology as a stimulus for maintaining food safety in the supply chain]. Zagadnienia Doradztwa Rolniczego, 2 (96), 49–63.

Treiblmaier, H. (2018). The impact of the blockchain on the supply chain: a theory-based research framework and a call for action. Supply Chain Management, 23 (6), 545–559.

Ustawa z dnia 25 sierpnia 2006 r. o bezpieczeństwie żywności i żywienia. Dz.U. 2015, poz. 594 [Act of 25 August 2006 on food safety and nutrition. Journal of Laws 2015, poz. 594].

BEZPIECZEŃSTWO ŻYWNOŚCI W ŁAŃCUCHU DOSTAW Z WYKORZYSTANIEM TECHNOLOGII *BLOCKCHAIN*

STRESZCZENIE

Celem tego artykułu jest określenie znaczenia technologii *blockchain* w zarządzaniu łańcuchem dostaw żywności. Praktycznym odniesieniem do przyjętego celu badawczego było wskazanie przydatności technologii *blockchain* do budowania zaufania między interesariuszami łańcucha żywnościowego. Jej wartością dodaną jest przede wszystkim znaczny wzrost przejrzystości operacji wśród wszystkich zainteresowanych stron korzystających z dużych zbiorów danych we wszystkich częściach łańcucha żywnościowego.

Słowa kluczowe: bezpieczeństwo żywności, technologia *blockchain*, digitalizacja w rolnictwie

UNEMPLOYMENT IN THE MAZOWIECKIE VOIVODESHIP – EFFECTS AND METHODS OF LIMITATIONS

Marzena Kacprzak✉

Warsaw University of Life Sciences – SGGW

ABSTRACT

Unemployment is an economic phenomenon where part of the working-age population are unable to find jobs despite seeking employment. The actual job search amongst the unemployed can be more or less intense. The Mazowieckie Voivodeship is characterized by high spatial diversity in the standard of living of the inhabitants and the conditions of economic development. On the one hand, the voivodeship boasts the highly economically developed capital of the country, on the other, there are medium or relatively underdeveloped areas. The aim of the article is to indicate the range of the phenomenon of unemployment in the Mazowieckie Voivodeship and to indicate the effects and methods of reducing it. The concept of unemployment is presented, the research methodology is outlined and the unemployment of Mazowieckie Voivodeship is analysed.

Key words: unemployment, labour market, economic activity, Mazowieckie Voivodeship, Poland

JEL codes: J16, R23

INTRODUCTION

The phenomenon of unemployment in Poland is one of the country's main socio-economic problems in the 21st century. It affects the standard of living of the population, the dynamics of economic development, social moods and stress levels which are associated with the job loss. In early economic theory, unemployment was treated as a voluntary choice. In classical economics, it was recognized that some people do not want to work for the wages offered to the employee and therefore join the population of the unemployed [Woźniak 2008]. Attention was also paid to the fact that the economy can never be completely free of unemployment. Continuous adjustments on the labour market, as well as restrictions that block constant adjustment of the real pay rate – the fixed minimum wage rates and agreements with unions – make it impossible to eliminate unemployment [Kamerschen et al. 1991].

Unemployment, as the dominant social issue of the transformation period, affects a significant part of Polish society. This not only leads to the accumulation of negative characteristics in the material, social or political situation (thus constituting the cause of many conflicts and social tensions), but also becomes a cause of the progressive degradation of professional qualifications and psychosocial predispositions of the unemployed. This leads to the emergence of marginalized social groups consisting of the unemployed and their families, in which the phenomenon of poverty inheritance is widespread [Kacprzak 1998]. Standards adopted today allow to present unemployment in two

Marzena Kacprzak https://orcid.org/0000-0002-0680-8241

✉marzena_kacprzak@sggw.pl

dimensions: subjective and objective. "In the subjective aspect, it is considered from the perspective of individuals affected by the lack of work and means the state of professional inactivity of persons able to work and reporting readiness to take up work, for whom the basis of existence is income from work" [Mlonek 1999] In the objective aspect, it is treated as an unrealized labour supply, which is the result of an imbalance between the supply of labour (human resources) and demand for work (employment absorption of the economy).

In contemporary economic literature [Kwiatkowski 2007, Owczarczyk 2011, Staszewska 2012, Drela 2015], three features of the unemployed are emphasized. These include: being unemployed, looking for a job and being ready to work.

The aim of the article is to indicate the range of the phenomenon of unemployment in the Mazowieckie Voivodeship and to indicate the effects and methods of reducing it. A query was used as the research method, which, according to the Polish dictionary, means "collecting information and materials needed to explain the research problem"[1]. In the article, the query was aimed at finding information about the problem of unemployment in the analysed voivodeship. Data mining was presented using computer technology, the source of data being regional studies carried out by the Statistics Poland (Główny Urząd Statystyczny).

MAZOWIECKIE VOIVODESHIP VERSUS THE COUNTRY

Mazowieckie Voivodeship covers an area of 35.6 thousand km^2, which makes it the largest voivodeship in the country. At the same time, it is one of the most internally diverse voivodeships in Poland. The Warsaw agglomeration plays a dominant socio-economic role and functions as an important European transport hub. However, part of the voivodeship has economic development rates below the national average.

As of 1 January 2018, the settlement network of Mazowieckie Voivodeship was made up of 87 cities and 8,526 rural settlements. All units are located in 42 counties (powiat), within the administrative boundaries of 314 boroughs, of which 35 are purely urban, 227 only rural, and 52 mixed urban and rural. Of all the cities, 5 have the status of a city with the rights of a county, and 33 are county cities [GUS 2019a].

In Mazowieckie Voivodeship, as of 31 December 2018, there were approx. 5.4 million people, which constituted 14.1% of the total population of Poland. Urban dwellers accounted for 15.1% of the country's urban population, and rural residents 12.5% of the total rural population. Compared to 2010, the population of the voivodeship increased by 2.59%.

The region's largest cities outside of Warsaw include: Radom with 227 thousand people, Płock – 127 thousand, Siedlce – 77 thousand, Ostrołęka – 54 thousand, and Ciechanów – 46 thousand citizens[2].

At the end of 2018, the population density was 152 people per 1 km^2 and was spatially very diverse. The lowest population density occurs in Łosicki County (40 people per 1 km^2), and the highest – in the Capital City of Warsaw (3,437 people per 1 km^2). According to long-term forecasts, in 2035 there will be 5.47 million inhabitants in Mazowieckie Voivodeship (4.3% more than in 2010). Despite these positive predictions, Mazovia will still be subject to the aging of the population seen throughout Europe. By 2035, the average age of Mazovia inhabitants will increase significantly and, as a result, certain changes in the population structure will occur. According to economic age groups – the percentage of people in post-working age will increase (to 25.7%), and those in working age will decrease (to 58.1%) [GUS 2014, Łotocka 2014]. The population structure by gender is characterized by a predominance of women – 52.5% of the population (as of the end of 2018), in the country: 51.6%. The feminization rate was 109 (in the country: 107). The urban population is more feminized than rural – 53.3% against 50.1%. The feminization index is 114 against 101.

Mazowieckie Voivodeship is the largest exporter and importer in the country. It exports, among other items: machines, devices, electrical equipment, trans-

---

[1] Słownik Języka Polskiego webpage https://sjp.pwn.pl/sjp/kwerenda [accessed: 23.11.2019].

[2] Samorząd Województwa Mazowieckiego website www.mazovia.pl [accessed: 23.11.2019].

port equipment, metals and metal products. Supply goods dominate in imports. At the end of December 2018, 816,423 economic entities were registered in Mazowieckie Voivodeship (18.7% of the total registered in Poland); 53.1% of them operated in Warsaw. The largest number of entities dealt with: retail and repair of motor vehicles (22.7% of all entities), professional, scientific and technical activities (14.8% of all entities), construction (9.7% of total entities) and industry (7.8% of all entities)[3].

The production of slaughter animals, cow's milk, fruit and vegetables and cereals have a significant share in the agricultural production of Mazowieckie Voivodeship. Producers from the region generated 15.1% of total national plant production and 19.8% of animal production in the country [GUS 2018].

THE IMPLICATIONS OF UNEMPLOYMENT

As of the end of December 2018, the number of people employed in the national economy in Mazowieckie Voivodeship reached 1.672 million and was 300 thousand larger (i.e. by 1.8%) compared to 2017. The employed individuals in this voivodeship accounted for 17.3% of the total population in the country [GUS 2018b].

The total number of employed by occupations, sectors and unit size at the end of the fourth quarter of 2018 was 2.772 million people (including 686.2 thousand people from the public sector and 2,085.5 million people from the private sector). The largest number of employees was observed in the following groups of professions:
- specialists – 702.2 thousand people (including 304.8 thousand people in the public sector and 397.4 thousand people in the private sector);
- service employees and salespeople – 446.7 thousand people (including 35.1 thousand in the public sector and 411.7 thousand in the private sector);
- office employees – 435.2 thousand people (including 126.3 thousand people in the public sector and 308.9 thousand people in the private sector).

The lowest number of employed by occupations at the end of the fourth quarter of 2018 was recorded in the following professions: farmers, gardeners, foresters and fishermen – 1.8 thousand people (including 0.7 thousand people in the public sector and 1.1 thousand people in the private sector).

At the end of December 2018, the number of the unemployed registered in county Labour Offices of Mazowieckie Voivodeship amounted to 136.5 thousand people (Table 2).

The highest decrease in unemployment was recorded in the capital city of Warsaw (by 25.6%) and in the following counties: Wyszkowski (by 17.9%), Mławski (by 17.3%), the smallest in: Nowodworski (by 0.01%), Przasnyski (by 1.9%) and Żuromiński Counties (by 2.2%). Only in Płoński County was there

Table 1. Employed persons (as of 31 December 2018)

Specification	2010	2017	2018		
	in absolute numbers			%	2017 = 100
Total	1 430 064	1 641 680	1 671 700	100.0	101.8
from the total numbers:					
men	697 396	789 970	804 225	48.1	101.8
women	732 668	851 710	867 475	51.9	101.9
public sectors	521 079	524 708	532 771	31.9	101.5
private sector	908 985	1 116 972	1 138 929	68.1	102.0
urban areas	1 246 599	1 402 238	1 426 876	85.4	101.8
rural areas	183 465	239 442	244 824	14.6	102.2

Source: GUS [2018].

[3] European Employment Services website ec.europa.eu/eures [accessed: 23.11.2019].

Table 2. Registered unemployment (as of 31 December)

Specification	2010	2017	2018
Poland			
Registered unemployed persons (thous.)	1 954.7	1 081.7	968.9
Newly registered unemployed persons annually (thous.)	3 042.0	1 914.8	1 662.1
Persons removed from unemployment rolls annually (thous.)	2 979.8	2 168.3	1 774.9
Registered unemployed persons per 1 job offer	83	16	15
Registered unemployment rate (%)	12.4	6.6	5.8
Mazowieckie Voivodeship			
Registered unemployed persons (thous.)	238.3	154.1	136.5
Newly registered unemployed persons annually (thous.)	319.1	225.2	197.7
Persons removed from unemployment rolls annually (thous.)	304.9	260.1	215.3
Registered unemployed persons per 1 job offer	110	19	25
Registered unemployment rate (%)	9.7	5.6	4.9
Capital city of Warsaw			
Registered unemployed persons (thous.)	38.6	26.1	19.4
Newly registered unemployed persons annually (thous.)	53.1	40.6	34.6
Persons removed from unemployment rolls annually (thous.)	45.8	47.8	41.3
Registered unemployed persons per 1 job offer	37	9	13
Registered unemployment rate (%)	3.5	2.0	1.5

Source: Developed on the basis of GUS [2018].

an increase of 0.1%. The majority of the unemployed were women – 52.1% (nationwide – 56.0%).

The registered unemployment rate in Mazowieckie Voivodeship at the end of December 2018 amounted to 4.9% (i.e. by 0.7 p.p. less than a year before); it was the fourth after Wielkopolskie, Śląskie and Małopolskie Voivodeship. Over the year, the unemployment rate decreased in 41 counties of the voivodeship (in No-wodworski County it remained at the previous year's level), mostly in Makowski (by 2.3 p.p.), Gostyniński (by 1.9 p.p.) and Ostrołęcki Counties (by 1.7 p.p.). The spatial differentiation of the unemployment rate remained unchanged throughout the voivodship. The spread between the lowest and the highest unemployment rate was 22.8 p.p. (in 2017 – 23.7 p.p.) [GUS 2019b]. The counties with the highest unemployment rate still included: Szydłowiecki (24.3%), Przysuski (18.4%) and Radomski (17.4%), and the lowest – the capital city of Warsaw (1.5%), West Warsaw (2.0%) and Grójecki (2.1%). An unemployment rate lower than the average in the voivodeship was also observed in the following counties (Table 3): Grodziski (2.9%),

Pruszkowski (3.3%), Piaseczyński (3.9%), Otwocki (4.1%), Wyszkowski (4.3%) and in the city of Siedlce (4.8%).

At the end of the year in question – 2018, 83.8% of the total unemployed in the voivodeship were not eligible for benefits (114.4 thousand people), 84.6% were previously employed, including those dismissed for reasons in the workplace – 4.5%. The percentage of people residing in the countryside was 46.7% (Table 4).

The counties in which the number of unemployed persons ineligible for an unemployment benefit was relatively the highest are: Przasnyski (90.6%), Sokołowski (89.5%) and Łosicki (89.3%). Counties where it was the lowest in: Ciechanowski (78.5%), Szydłowiecki and Grodziski Counties (79.3% and 79.4%, respectively).

As indicated in the figure (p. 54), the largest number of all registered unemployed in 2018 was aged 25–34 (26.6%), in particular women. The highest unemployment rate among men was recorded in the group of 55 years of age.

Table 3. Unemployed persons registered in Labour Offices by groups of counties

| Specification | Registered unemployed persons annually | | | Registered unemployment rate (%) |
| | total | of total number (%) | | |
		out of work for longer than 1 year	aged 24 and less	
Voivodeship	136 545	42.6	11.4	4.9
County				
Białobrzeski	1 079	43.9	15.1	7.6
Ciechanowski	3 378	35.8	12.4	9.9
Garwoliński	3 902	49.4	16.3	9.1
Gostyniński	2 524	47.9	11.6	14.5
Grodziski	1 046	29.4	12.0	2.9
Grójecki	953	22.0	18.2	2.1
Kozienicki	2 634	47.4	10.4	10.9
Legionowski	2 331	35.1	9.8	6.9
Lipski	1 597	39.6	17.7	9.9
Łosicki	879	38.8	15.4	5.6
Makowski	3 019	54.4	19.6	16.3
Miński	2 554	39.8	11.3	5.2
Mławski	1 727	34.0	14.2	5.9
Nowodworski	1 901	40.5	9.9	6.0
Ostrołęcki	3 322	48.3	17.1	10.1
Ostrowski	2 478	44.3	17.8	8.5
Otwocki	2 008	34.4	9.0	4.1
Piaseczyński	3 487	42.0	8.2	3.9
Płocki	4 338	44.7	13.0	11.6
Płoński	3 622	45.1	17.2	10.3
Pruszkowski	2 541	41.7	5.1	3.3
Przasnyski	2 027	46.6	15.2	9.6
Przysuski	3 515	52.5	15.1	18.4
Pułtuski	2 555	41.9	16.9	12.5
Radomski	9 489	46.9	13.0	17.4
Siedlecki	1 729	40.1	14.4	5.5
Sierpecki	3 106	53.3	14.9	16.6
Sochaczewski	2 084	41.2	14.3	5.9
Sokołowski	1 326	40.4	16.9	5.6
Szydłowiecki	3 541	47.8	11.9	24.3
West Warsaw County	1 240	38.6	6.9	2.0
Węgrowski	1 624	43.1	16.4	6.3
Wołomiński	5 951	36.4	10.0	7.4
Wyszkowski	1 327	21.1	19.7	4.3
Zwoleński	1 588	33.3	18.7	10.8
Żuromiński	2 480	49.2	15.8	14.9
Żyrardowski	2 765	52.1	11.4	10.4
Cities with county status				
Ostrołęka	2 302	51.4	8.9	9.1
Płock	4 269	41.6	8.7	6.8
Radom	11 123	46.2	7.9	12.1
Siedlce	1 802	41.5	8.1	4.8
Capital city of Warsaw	19 382	35.3	4.2	1.5

Source: Own elaboration on the basis of online database of Statistical Office in Warsaw. Retrieved from https://warszawa.stat.gov.pl [accessed: 24.11.2019].

Table 4. Registered unemployed persons ineligible for benefits

Specification	2010	2017	2018		
	in absolute numbers			%	2017 = 100
Total	1 999 198	130 880	114 407	100.0	87.4
Men	102 421	64 821	55 639	48.6	85.8
Women	96 777	66 059	58 768	51.4	89.0
Urban areas	110 591	71 640	61 025	53.3	85.2
Rural areas	88 607	59 240	53 382	46.7	90.1

Source: GUS [2019].
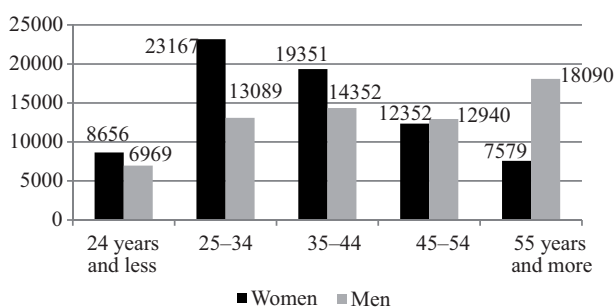
Fig. Registered unemployed persons by age in 2018 (as of the end of 4th quarter)

Source: Author's own study on the basis of based on online database of Statistical Office in Warsaw. Retrieved from https://warszawa.stat.gov.pl [accessed: 24.11.2019].

Young people constitute a special category of employees. As the research shows [Kacprzak 2008, Drejerska et al. 2014, Łotocka 2014, Luck and Jankowska 2016, Drejerska 2018, Boguszewski 2019], due to limited or no professional experience, they are not a group particularly sought after or desired by employers. Maladjustment of education to the needs of the labour market and insufficient education in scarce occupations mean that employing a young person requires the employer to engage additional funds for their education in terms of a specific job. In the case of young women, the employers still predominantly have the opinion that when starting work and having security, a woman decides to have a child sooner, which in turn means that the employer loses the employee for a minimum of 12 months. An important element is the fact that the newly incoming residents are young, well-educated people with relatively high incomes. The question about the features that a dream job should have was answered: good salary, convenient working hours, a sense of security, including an employment contract, health and retirement contributions paid. Other answers included: the opportunity to develop new skills and qualifications, the possibility of promotion, contact with people, the ability to realize one's own ambitions and professional dreams, a sense of independence, a sense of being needed or prestige.

By territory, the highest percentage of people aged 25–34 was recorded in the Łosicki and Siedlecki Counties (33.6% and 33.4%, respectively), and the lowest – in West Warsaw County (21.0%) and the capital city of Warsaw (21.2%). The number of the youngest, i.e. aged 24 and under, among the unemployed was the lowest; their share has been systematically falling since 2010 and amounted to 11.4% in 2018.

Towards the end of 2018, in Mazowieckie Voivodeship, the combined percentage of people with basic vocational and lower secondary education, primary and incomplete primary education was 50.3% (from 34.2% in the capital city of Warsaw to 63.4% in Białobrzeski County). Share of 23.3% of the unemployed had basic vocational education, of which the most were in Szydłowiecki County (35.2%), and the fewest in the capital city of Warsaw (11.2%). The combined percentage of people with lower secondary, primary and incomplete primary education was 27.0%. The highest rate was recorded in Nowodworski County (36.8%), and the lowest in the city of Ostrołęka (18.9%).

The highest number of the best-educated unemployed occurred in the capital city of Warsaw (33.1%), and the lowest in Garwoliński County (8.9%); the smallest group among the unemployed were people with general secondary education – 11.8%.

The County Labour Offices have received 213.9 thousand job offers. Most of those offers were received

by the Labour Office in the capital city of Warsaw – 58.4 thousand and in Piaseczyński County (27.2 thousand) and Pruszkowski County (17.8 thousand). The smallest number of offers was recorded in Zwoleński County – 0.4 thousand, Ostrołęcki County – 0.8 thousand, Przasnyski County – 0.9 thousand. As of the end of December, there were on average 25 unemployed persons per 1 job offer.

From the data presented and observations of the labour market of Mazowieckie Voivodeship, the effects of unemployment in this voivodeship can be divided into three areas [Bańka 1992, Borkowski and Marcinkowski 1999]:

- social – a sense of exclusion from society, unwillingness to participate in the life of the local community, deterioration of health, reduced standard of living, marriage breakdown, social pathologies, postponement of marriage decisions (especially among young people), no role models, need to retrain employees, inability to meet daily needs;
- psychological – unwillingness to seek employment, suicide, disappointment, disbelief in one's own strength and employee qualifications, lack of perspectives, loneliness, emotional disorders, too small a budget to allocate, aggression;
- economic – loss of human capital, development of the so-called shadow economy, fight against unemployment, Labour Office support in creating tools and methods of working with the unemployed, lowering household income, which leads to a decrease in global demand.

It is important to support individual institutions related to the labour market in eliminating unemployment problems. In the case of voivodeship and county labour office, the following forms of support are used:

- job placement – office employees carrying out their usual tasks help the unemployed and jobseekers to obtain appropriate employment by passing on and obtaining information on job offers and directing them to employers for an interview; on the other hand they provide assistance to employers in recruiting appropriate employees by directing persons who best meet requirements described in the job offer; they initiate and organize meetings of the unemployed and jobseekers with employers as part of exchanges and job fairs; an important task is also

to inform clients about the current situation and anticipated changes on the local labour market and to provide information to the unemployed about their rights and obligations arising from the registration;

- vocational counselling – assistance can be provided in the form of individual contact of an office employee with a person in need of assistance, or on the telephone or internet, office employees also conduct group meetings in the form of workshops with people in need of assistance;
- other ways of supporting the improvement of qualifications: internships and vouchers, trainings, vocational courses for adults, tripartite training agreements, co-financing of post-graduate studies, scholarship for further education, training loans, financing of exams and licenses;
- cash benefits – unemployment benefits, activation allowances, benefits for farmers made redundant;
- help for people with disabilities.

For people with disabilities who have the status of "jobseekers" and do not remain in employment, services of the labour office and instruments financed from (State Fund for Rehabilitation of the Disabled (Państwowy Fundusz Rehabilitacji Osób Niepełnosprawnych – PFRON) funds are provided.

SUMMARY

Everyday observation of society's life shows that the problems of unemployment are of interest to politicians, sociologists, psychologists, demographers, economists and ordinary people. It is therefore important to raise awareness of this problem for the economy, citizens and the unemployed themselves.

Unemployment is an important issue for the social policy of Poland and in the Mazowieckie Voivodeship. The majority of people registered in Labour Offices were women, and the largest group among the unemployed included young people aged 25–34. Also, the percentage of those unemployed for the shortest period (1 month and less) increased by 0.9 p.p., the percentage of the unemployed over 50 years old decreased by 0.6 p.p. down to 27.9%.

People with the shortest job experience (less than 1 year or between 1–5 years) had the greatest difficulties in finding a job. Among the most frequent answers

given to questions why people do not find a job or do not take it were: lack of work near the place of residence, very poor transportation infrastructure, lack of favourable conditions for travel to work or school. For these reasons, it is difficult to take up shift work or start work in the early morning when public transport does not run. There are few implemented investments, there is still a dominant agricultural character of rural areas. Inhabitants of the voivodeship also do not find work easily because they are generally low-qualified.

A deeper analysis is necessary of the main risk areas resulting from unemployment problems, applied support and actions of state institutions.

REFERENCES

Bańka, A. (1992). Bezrobocie. Podręcznik pomocy psychologicznej [Unemployment. A textbook of psychological aid]. Print-B, Poznań.

Boguszewski, R. (2019). Aspiracje, dążenia i plany życiowe młodzieży [Ambitions, aspirations and life designs of the youths]. In: M. Grabowska, M. Gwiazda (Eds.), Raport. Młodzież 2018. Centrum Badania Opinii Społecznej, Krajowe Biuro Przeciwdziałania Narkomani, Warszawa, 88.

Borkowski, T., Marcinkowski, A. (1999). Socjologia bezrobocia [Sociology of unemployment]. Biblioteka Pracownika Socjalnego, Katowice.

Drejerska, N. (2018). Przemiany sektorowej struktury zatrudnienia ludności wiejskiej [Changes in the sectoral employment structure of the rural population]. Wydawnictwo SGGW, Warszawa.

Drejerska, N., Chrzanowska, M., Pomianek, I. (2014). Strefa podmiejska Warszawy. Wybrane zagadnienia [Suburban zone of Warsaw. Selected issues]. Wydawnictwo SGGW, Warszawa.

Drela, K. (2015). Socjologia i inne nauki o pracy i bezrobociu – część II [Sociology and other science about employment and unemployment – Part II. Zeszyty Naukowe Zachodniopomorskiej Szkoły Biznesu Firma i Rynek, 1, 75–86.

GUS (2014). Prognoza demograficzna ludności Polski na lata 2014–2050 [A Demographic Forecast for Poland for 2014–2050]. Warszawa.

GUS (2018). Raport o sytuacji społeczno-gospodarczej województwa mazowieckiego w 2018 r. Analizy statystyczne [Report on the socio-economic situation of the Mazowieckie voivodship 2018. Statistical analyses]. Warszawa.

GUS (2019). Rynek pracy w województwie mazowieckim 2018. Analizy statystyczne [Labour market in Mazowieckie voivodship in 2018. Statistical analyses]. Warszawa.

GUS (2019). XX-lecie województwa mazowieckiego [20 years of the Mazowieckie voivodship]. Warszawa.

Kacprzak, M. (2008). Aktywne formy rozwiązywania problemów bezrobocia na przykładzie działań Powiatowych Urzędów Pracy [Active methods of solving unemployment problems on the example of the activities of the County Job Offices]. In: J. Sawicka (Ed.), Sytuacja kobiet wiejskich na rynku pracy. Badania empiryczne. Wydawnictwo SGGW, Staszewska Warszawa.

Kamerschen, D.R., McKenzie, R.B., Nardinelli, C. (1991). Ekonomia [Economics]. Fundacja Gospodarcza NSZZ „Solidarność", Gdańsk.

Kwiatkowski, E. (2007). Bezrobocie. Podstawy teoretyczne [Unemployment. Theoretical basics]. Wydawnictwo Naukowe PWN, Warszawa.

Łotocka, M. (Ed.) (2014). Badanie osób młodych na mazowieckim rynku pracy [A study in young people on Mazowieckie's labour market]. Wojewódzki Urząd Pracy, Warszawa.

Luck, A., Jankowska, A. (2016). Raport: Sytuacja osób młodych w woj. mazowieckim. Diagnoza z perspektywy systemu edukacji, rynku pracy oraz funkcjonujących form i obszarów wsparcia. Rekomendacje dla IRP [2016 Report: The situation of the youth in Mazowieckie Voivodship. A Diagnosis from the perspective of the education system, labour market and the existing forms and areas of support. Recommendations for IRP]. Warszawa.

Mlonek, K. (1999). Bezrobocie w Polsce XX wieku w świetle badań [Unemployment in Poland in the 20th century]. Krajowy Urząd Pracy, Warszawa.

Owczarczyk, A. (2011). Bezrobocie a zatrudnienie w małych i średnich przedsiębiorstwach w Polsce w latach 1998–2007 [Unemployment against employment in small and medium-sized businesses in Poland in 1998––2007]. Acta Universitatis Lodziensis, Folia Oeconomica, 248, 219–236.

Śmilgin, M. (2006). Indywidualne i społeczne skutki bezrobocia na tle globalizacji [Individual and social effects of unemployment against globalization]. Nierówności Społeczne a Wzrost Gospodarczy, 8, 423–434. Retrieved from http://ur.edu.pl/pliki/Zeszyt8/31_smilgin.pdf [accessed: 23.11.2019].

Staszewska, E. (2012). Środki prawne przeciwdziałania bezrobociu [Legal measures of preventing unemployment]. LEX e Wolters Kluwer business, Warszawa.

Szylko-Skoczny, M., Możdżeńska-Mrozek, D. (1992). Społeczne skutki bezrobocia w wymiarze lokalnym: raport z badań empirycznych [Social consequences of unemployment in the local dimension: a report from empirical research]. Fundacja im. Friedricha Eberta w Polsce, Warszawa.

Woźniak, B. (2008). Bezrobocie równowagi i nierównowagi a polityka państwa wobec rynku pracy [Unemployment of balance and imbalance versus the state policy of the labour market]. Akademia Ekonomiczna w Poznaniu, Poznań.

BEZROBOCIE W WOJEWÓDZTWIE MAZOWIECKIM – SKUTKI I METODY OGRANICZANIA

STRESZCZENIE

Bezrobocie jest zjawiskiem gospodarczym polegającym na tym, iż pewna część społeczeństwa znajdująca się w wieku produkcyjnym nie może znaleźć pracy pomimo podjęcia poszukiwań. Samo poszukiwanie pracy przez osoby bezrobotne może być bardziej lub mniej intensywne. Województwo mazowieckie cechuje duże zróżnicowanie przestrzenne w poziomie życia mieszkańców i warunków rozwoju gospodarczego. Z jednej strony na terenie tego województwa mamy do czynienia z silnie rozwiniętą pod względem gospodarczym stolicą kraju, z drugiej zaś występują tereny średnio lub relatywnie słabo rozwinięte. Celem artykułu jest wskazanie zakresu występowania problemu bezrobocia w województwie mazowieckim. Istotnym elementem było wskazanie skutków i metod jego ograniczania. Przedstawiono pojęcie bezrobocia, nakreślono metodologię badań oraz dokonano analizy bezrobocia w województwie mazowieckim.

Słowa kluczowe: bezrobocie, rynek pracy, aktywność zawodowa, województwo mazowieckie, Polska

THE AGRICULTURE TAX SYSTEM AND THE PERSPECTIVE OF ITS CHANGES IN THE OPINION OF FARMERS IN THE WARMIŃSKO--MAZURSKIE VOIVODESHIP

Roman Kisiel✉, Wiesława Lizińska, Olga Senyszyn

University of Warmia and Mazury in Olsztyn

ABSTRACT

The research aim is to verify opinions among farmers in Poland about the current taxation system, and their willingness to possibly approve of reforms of taxes in agriculture. Direct research using a questionnaire was conducted in the second half of 2018 among 197 farm owners from four districts in the Warmińsko-Mazurskie Voivodeship. For about 1/3 of the farmers surveyed, introducing changes to the tax system would cause too much financial burden in relation to the level of income achieved. The farmers confirm the legitimacy of favouring agriculture in the taxation system, which they are not completely satisfied with in this form. At the same time, 55% of respondents were not ready to accept the new rules of system operation, while about 20% of respondents would be able to accept the reform. They pointed out various reform proposals, the best solution (34.52% of respondents) would be to liquidate the agricultural tax and replace it with a land tax (in the amount of 50% of the agricultural tax rate). According to 27% of respondents, the current tax system is adequate and does not require changes.

Key words: agriculture farms, taxation system in agriculture, reforms of system

JEL codes: Q14, H25

INTRODUCTION

Considerable differences emerge between the EU states in terms of taxation systems. Discrepancies occur not only in different approaches to taxes (direct and indirect ones) but also (within the same tax) in different definitions of a taxation base, tax rates, etc. This is also true about taxes levied in agriculture [Parsche and Radulescu 2004]. In most of the taxation systems binding in the EU member states, agriculture-related taxes are not distinguished from the general system, although farm owners are treated differently than other taxpayers. There are two approaches to taxation of agriculture: one that treats farmers equally with other occupational groups, sometimes, but not always, providing some tax relief for agricultural incomes. The other approach treats agriculture preferentially, by implementing special taxation regulations that aim to protect and support farmers [Kulawik et al. 2013].

Roman Kisiel https://orcid.org/0000-0002-3282-1378; Wiesława Lizińska https://orcid.org/0000-0002-6957-2846

✉kisiel@uwm.edu.pl

Separation from the general taxation system is a distinguishing feature of the agriculture taxation applied in Poland [Kisiel and Idźkowska 2014]. As highlighted by Gruziel [2008], the fact that taxation of farmers is excluded from the general taxation system is a sufficient proof that taxpayers are not treated equally and that principles of taxation fairness and equality are undermined. Dziemianowicz [2007] also notices that the construction of taxes should eliminate any elements which favour inefficient farming, as these should be replaced by a new construction that would boost the development of agriculture and the entire economy.

The preferential tax regulations for agriculture in Poland give rise to objections expressed by groups of taxpayers not involved in farming, who, for the sake of social justice, demand to be treated equally in terms of payable taxes [Chlebicka and Lewandowski-Lepak 2012]. Criticism pertains to the way taxes are calculated and to their incongruence with the current economic situation in Poland. The system is unsuitable for both agriculture and the whole domestic economy [Kubot and Czubak 2016]. Since the early 1990s, parallel to the ongoing transformation processes, it was suggested that agriculture be levied a general income tax so as to achieve cohesion of the whole taxation system and obtain higher fiscal efficiency and more effective attainment of non-fiscal goals from this sector [Wójtowicz 2016]. Consequently, attempts have been made to reform the taxation system in farming, particularly by introducing personal income tax. The legitimacy of such an approach is seen, for instance, in the fact that most benefits are reaped by the largest farms, where high revenues do not commensurate with a small financial burden of taxation. The current solution is also questioned because agricultural tax contributes little to municipal budgets, which secure the highest revenues from real estate property taxes [Cholewa and Nachtman 2014].

In the Polish taxation system, the most significant form of a tax levied on agriculture is agricultural tax [Forfa 2011], which is generally paid by all farmsteads, often entitled to certain tax reliefs [Pawłowska-Tyszko et al. 2015]. Agricultural tax is a tax whose collected amount mostly feeds the budgets of rural municipalities. However, the ratio of rural municipality revenues from agricultural tax to their own revenues and income from local taxes is decreasing. This trend may have been affected by the development of residential functions and services in the countryside, especially in municipalities located near larger cities [Kozera 2017]. Furthermore, as noted by Mielczarek [2017], if agricultural tax were to be replaced by personal income tax, farmers would benefit as well, provided low tax rates were applied. Meanwhile, the substitution of agricultural tax with personal income tax would be beneficial to the state and to local governments of provinces and districts, while municipalities would benefit too if the adopted tax rate exceeded 10%. In turn, a study completed by Prymon and Turowska [2017] concludes that imposing general income tax on farmsteads does not guarantee higher revenues earned by the state budget. According to these researchers, the best solution would be to apply a lump-sum tax of about 2%.

There are many implications suggesting that the taxation system in agriculture should be reformed. One of the reasons is the improved economic standing of Polish farms owing to the country's access to the EU. Tax reforms could also help to unify the entire taxation system [Owsiak 2016]. To respond to this need, researchers propose many concepts and assess different ways in which the system might be reformed. An example is a project modelled on the German system, which envisages that farmers would keep account books. Following the reform, agricultural tax would be replaced by personal income tax or property tax. Income tax liabilities would be calculated in compliance with the general regulations (based on entries in revenue and expense ledgers or in account books), or a lump-sum tax on recorded income [Cholewa and Nachtman 2014]. However, as Dziemianowicz [2007] as well as Van der Veen and co-authors [2007] observe, estimating an income is still a gross problem in many EU countries. Information about standards is usually available, but it is not entirely clear.

The pace of changes in the taxation system applied to agriculture depends on the country's agricultural policy and the policy of the EU, which strives towards harmonisation of taxation systems. There is another significant aspect to be considered, which is the willingness of farmers to accept reforms.

RESEARCH OBJECTIVES AND METHODOLOGY

The research aim was to verify opinions among farmers about the current taxation system, and their willingness to possibly approve of reforms of taxes in agriculture. Achievement of this goal relied on the authors' own investigations. A direct study using a specially designed survey questionnaire was carried out in the second half of 2018. The survey was responded to by 197 owners of farms from four districts (powiat): Braniewski, Elbląski, Olsztyński and Ostródzki, situated in the Warmińsko-Mazurskie Voivodeship. The voivodeship as well as the selected districts are distinguished by a highly important role of agriculture in their development, which was an argument supporting our choice. According to data collected by the Statistics Poland (Główny Urząd Statystyczny), the total area of the province used for farming made up 6.45% of the farmland in Poland (seventh position among all Polish voivodeships). The share of persons[1] employed in the agricultural sector in the Warmińsko-Mazurskie Voivodeship equalled 11.65% of the whole working population (10.18% on average in Poland). According to the agricultural census, the four districts chosen for the study comprise 28.35% of all farms with more than 1 ha of arable land located in the province, which in turn makes up 26.44% of the total farmland in the voivodeship.

Questions contained in the survey concerned: the level of satisfaction from the way the taxation system in agriculture worked, willingness of farmers to accept reforms in this system, suggested taxation base for farms, and worries raised by the implementation of reforms in the taxation system. The analysis based on the acquired opinions of farmers was presented against the background of the farms' area, type of activity conducted and achieved revenue.

RESEARCH RESULTS

The ongoing debates regarding conditions underpinning agricultural taxation reforms and a possibility of implementing some changes reveal one important issue: the consequences of possible reforms on the revenues earned by agricultural farms. This in turn determines the outcome of all analyses of other factors affecting the economic position of farms, and consequently their capacity to bear a potentially higher tax load.

As underlined by Poczta and co-authors [2009], the number of factors that determine the revenue situation of farms, their power and direction of impact, vary depending on what type of agricultural producers a given farmer belongs to. Furthermore, there are unmeasurable or hardly quantifiable determinants of agricultural revenues. The income side of farming is undeniably affected by a farm's productive capacity (especially defined by the size of arable land owned by a farm and technical facilities aiding a farmer's work). In addition, it has been noticed that the said income is influenced by many of the analysed variables, but the specific set of these variables and their force of impact vary between types of farms. Generally, the lower the revenue a farm representing a given type of agriculture earns, the greater the number of statistically significant variables affect the amount of earned revenues.

In a study we conducted, the determinants of agricultural revenues included the area structure of a farm and the type of agricultural production it carried out. An analysis was also made to discover farmers' self-assessment of revenues earned by their farms (on a scale: low-income, moderate-income, and high-income farm). Among the farms submitted to the study, there were large differences in acreage (Fig. 1). According to data provided by the Agency for Restructuring and Modernisation of Agriculture (Agencja Restrukturyzacji i Modernizacji Rolnictwa), the average area of farmland per farm in Warmia and Mazury region was 23.05 ha. In each of the four districts submitted to this study, the dominant type of farms was the one with mixed production (47.62–62.07%). A relatively small number of respondents ran farms totally dedicated to animal production, while organic farms were even less popular (Fig. 2).

The profile of agricultural production is often associated with the area structure of a farm. Mixed production is characteristic for smaller farms. Plant

---

[1] Working over 15 years (on average a year), according to labour force surveys – BAEL [GUS 2018].
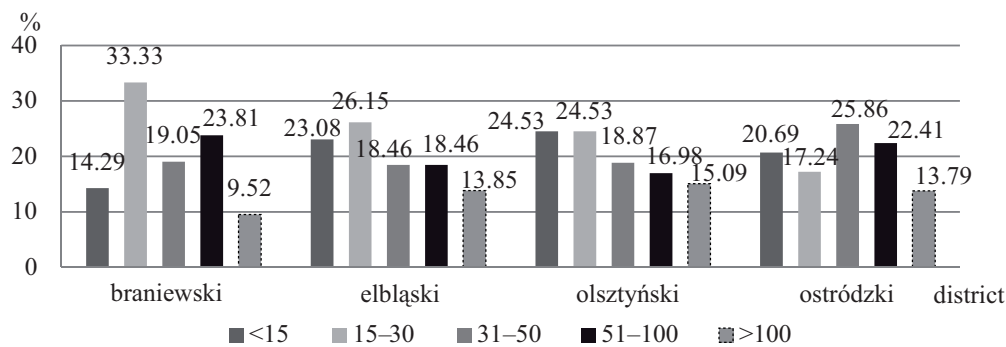
Fig. 1. Area structure of analysed farms
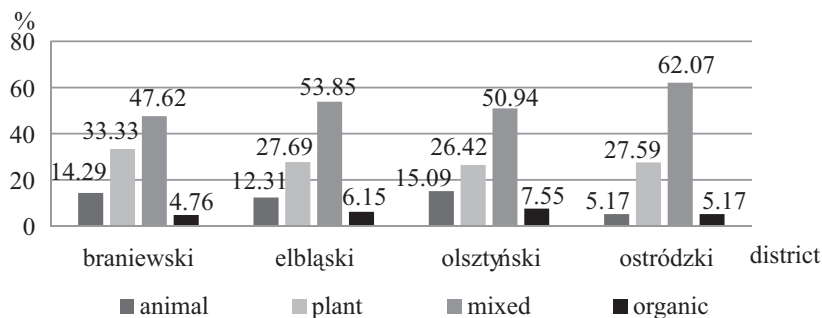
Source: Own research and elaboration.

Fig. 2. Type of agricultural production

Source: Own research and elaboration.

and animal production farms are often medium-size and large farms. These farms combine plant and animal production because commodity plant production (mostly cereals) alone, except horticulture and vegetable production, cannot guarantee large profits [Kania and Kapłon 2014]. Finally, organic farms are more and more common in Poland, mainly because they are heavily subsidised by the EU. Organic farms, as demonstrated by Brodzińska [2014], are the farms that do not supply commodity goods, and subsidies from the EU allocated to farms with organic food production are their main source of revenues. The prevalent number of farms in each district was classified by their owners as generating moderate or low revenues (Fig. 3). The least numerous were high-income farms. Changes in the taxation system in agriculture might cause the most serious difficulties for owners of low-income farms because, as

implicated by Pawłowska-Tyszko and Agustyńska-Grzymek [2016], the fiscal burden on economically weak farms is relatively the heaviest.

Among the principal issues raised in the subject literature, two questions concerning taxation in agriculture are emphasised. One issue is the exclusion of this tax from the general system, while the other deals with the different character of the taxation system in agriculture in Poland versus the solutions in other EU countries. Attention is also drawn to the consequences of this model for the development of agriculture, the influence on changes in the agrarian structure, particularly distracted allocation of resources. This research also deals with opinions among farmers about individual elements of the taxation system addressed to agriculture. Respondents gave the highest score (4 on a 1–5 scale) to the duration of tax periods. The following components of the tax system were evaluated
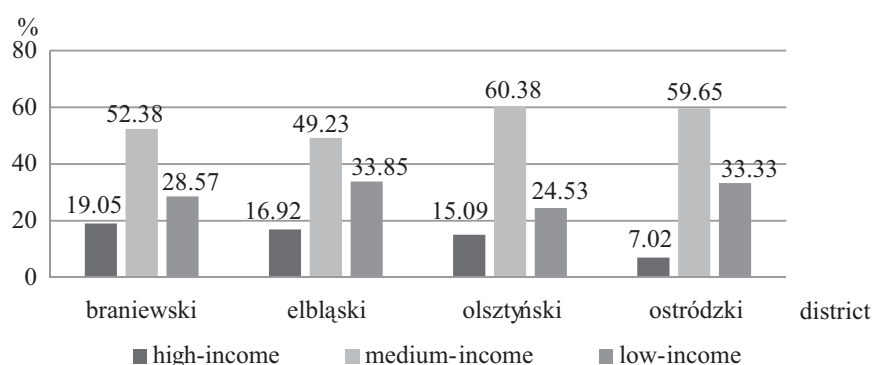
Fig. 3.   Level of income earned by farms

Source: Own research and elaboration.

poorly: tax discounts and reliefs, stability and clarity of tax law (Fig. 4).

The results might have been influenced by the fact that the respondents made a general evaluation of all components of the tax system. Hence, a deeper analysis was carried out at a later stage of the study, when particular taxes, i.e. agricultural, forest and VAT, were evaluated separately. Agricultural tax was assessed by 46.70% of the respondents as being an excessive burden to small farms, which may have been caused by the dominant share of small and medium-sized farms participating in the study. However, an earlier study by Pawłowska-Tyszko and Augustyńska--Grzymek [2016] also concluded that fiscal burden (taxes and para-taxes) was incommensurably high relative to the revenues generated by farms characterised by different economic strength (from 2% of the revenue in economically strong farms to 6–8% in economically weak ones). However, the results of

the Ganc and Mądra [2011] research showed that the majority of farmers confirmed that the tax burden on agriculture is low.

In the questionnaire reported herein, about 26% of the respondents agreed that the construction and function of agricultural tax were proper. However, according to the farmers questioned, forest tax was an additional burden to agricultural activity (43% of the respondents).

The VAT construction and the principles underlying this tax were evaluated as being unclear and complicated by as many as 41% of the farmers, while 29% pointed to difficulties in settling VAT liabilities. Farmers remain apprehensive of VAT due to the commonly held belief that this is a complicated tax. As observed by Kondraszuk and Jaworski [2017], the rules guiding the VAT application are not correctly interpreted and effects of this tax are likewise wrongly understood. Having examined the situation in EU member states
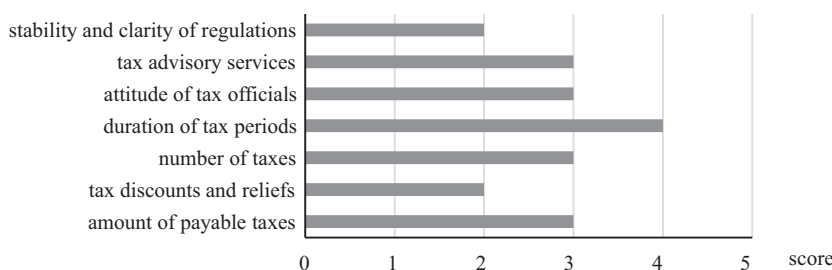
Fig. 4.   Average assessment score of particular components included in taxes in agriculture

Source: Own research and elaboration.

and in some other countries, Cnossen [2018] concluded that farmers are often exempted from VAT on administrative or political grounds. However, this means that farmers are unable to discount the VAT paid on their inputs into agriculture.

Despite many opinions in favour of the inclusion of farmers into the general tax system, there are many groups of researchers clarifying why this occupational group should be treated differently. The overriding arguments are: changeability of farm revenues, dependent on the economic situation in and outside one's country as well as the weather conditions, a low rate of return from agriculture, and in some countries an aspiration to ensure food self-sufficiency [Pawłowska--Tyszko et al. 2012].

The farmers were also asked whether they thought it was justified to give certain privileges to agriculture. Approximately 10% did not see any reason why agriculture should be included in the general taxation system. A distinct majority (about 75%) decided that farming should have some preferences, but fewer farmers stated they were absolutely clear about it (25.4%), which may create a chance that farmers will approve of tax reforms in the future. About 15% of the respondents had no opinion on this matter.

The agriculture taxation system will need to be reformed in the future, mostly in order to harmonise taxes in all EU states, hence the surveyed farmers were asked whether they were willing to accept a change. About 55% were not ready to adopt new rules of the taxation system. Approximately 20% of the respondents would be ready to accept a change, while about 25% were not certain. In conclusion, farmers do not feel fully prepared to accept reforms in the tax system, but the number of those who strongly oppose to any change is distinctly the smallest. The farmers evaluated several tax reform concepts (Fig. 5). In their opinion, the best solution (34.52% indications) would consist of the abolishment of agricultural tax and its replacement with a land tax (in an amount corresponding to 50% of the agricultural tax rate). However, this solution is not adequate to the changing conditions of agricultural activity, because the importance of land as a factor of production is diminishing due to, among other things, technological progress. The land owned is not always used for agricultural production.

This solution would not be excessively complicated and would benefit farms with various area structure. About 24% of the farmers chose the requirement of keeping a ledger of incomes and costs, which would also be a simple solution, simultaneously providing basic information about a farm. Nearly 14% claimed that farms should be levied a PIT according to the same rules as any other business
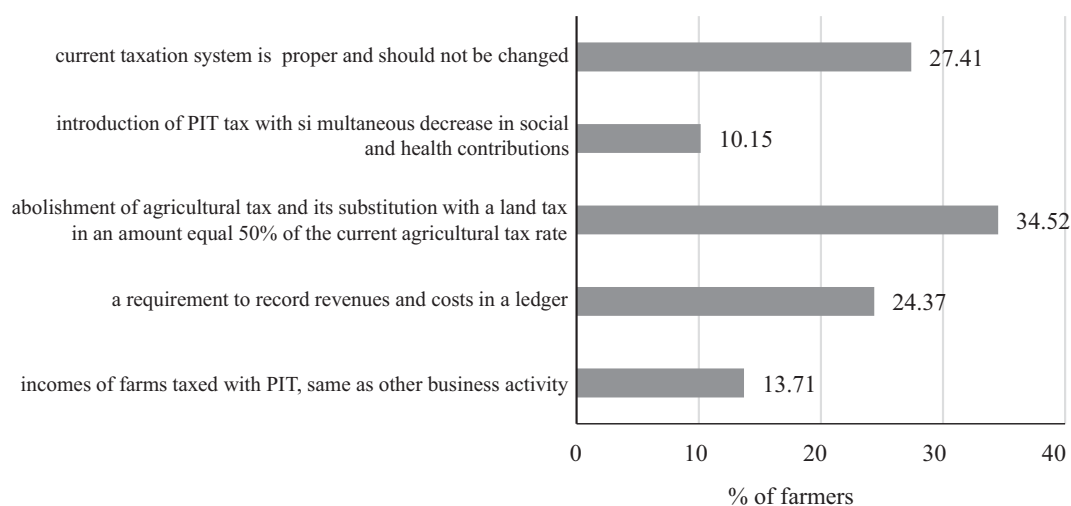

Fig. 5. Suggested reforms of the taxation system in agriculture, evaluated by the respondents

Source: Own research and elaboration.

activity, while 10.15% would accept PIT on condition that social and health contributions were decreased. Around 27% were in favour of the opinion that the current taxation system in agriculture is appropriate and does not require any change. The farmers were asked to indicate the most beneficial tax rate base, which in their opinion should be implemented in the system (Fig. 6). The largest group (41.12%) pointed to the number of standardised hectares a farm possesses, which is the current tax base. In sum, about 60% of the respondents pointed to a tax base different from the one used until now.

The simulation of fiscal consequences of implementing various ways of levying taxes on agricultural activity, carried out by Wójtowicz [2016], demonstrated that each new solution would create a greater tax burden for farmers than imposed by today's system. Also, a burden on farms with a lump sum from those obtained revenues would be bad for farms. In this form of taxation, it is not possible to deduct operating costs, which are high in the case of agricultural activity [Wasilewski et al. 2016].

A chance that the taxation system in Poland might be reformed evokes many worries among farmers (Fig. 7). The worries are associated with bureaucracy and, worse, the material situation of farms. Similar fears raised by potential reforms to the taxation system were identified in a survey conducted by Kubot and Czubak [2016], where farmers highlighted that they would need to maintain account ledgers and worried they would have to bear an additional tax burden. Should any reforms be planned, farmers would expect solutions to support the adjustment process. For farmers, it would be crucial to have a transition period, introduce simplified form of recording cash flows, and to have user-friendly tax forms.
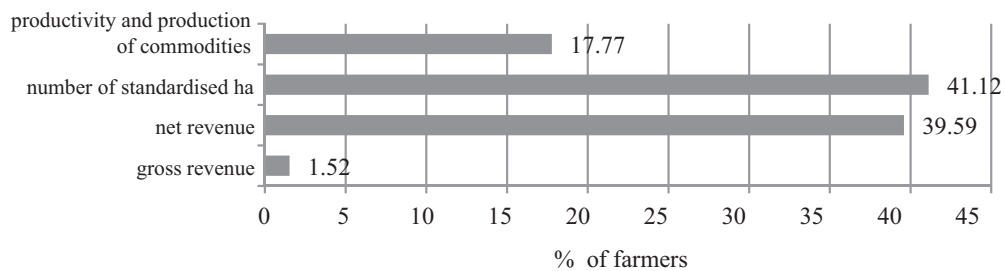
Fig. 6. Suggested tax base for farms evaluated by the respondents

Source: Own research and elaboration.
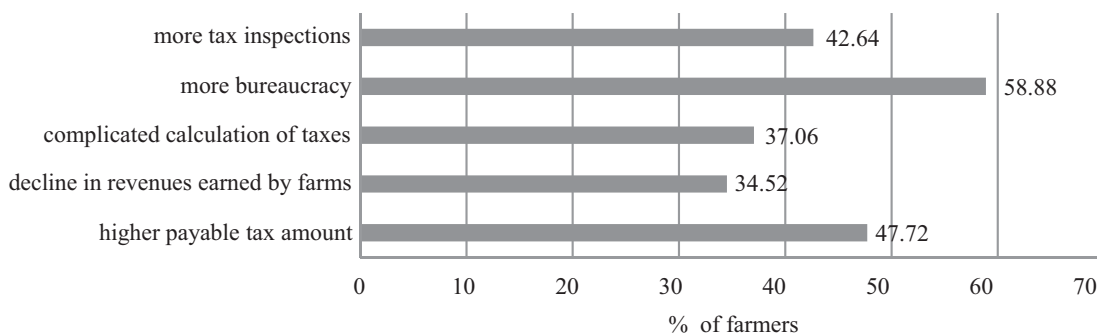
Fig. 7. Worries raised by reforms in the taxation system

Source: Own research and elaboration.

Recapitulating, if new regulations are to come to life, the legislator should strive towards creating a system based on simple and clear regulations, essential for its efficient functioning. An important element of a future system would be to shape it in favour of regulations which would not raise doubts regarding their interpretability when a farm is subjected to tax inspection. The system should also support farmers and farms, and contain mechanisms to prevent a sudden decrease in a farmer's income.

SUMMARY

Considering the size structure of farms, types of farming and levels of earned revenues, it is possible to conclude that if the current taxation system were to be reformed, about 1/3 of the farmers covered by our research who evaluated their farms as low-income would have to bear a greater fiscal burden, which is already relatively higher than the fiscal burden imposed on farms that enjoy a more favourable income situation. It also needs to be highlighted that the vast majority of farmers are in favour of the preferential treatment of agriculture in terms of taxes, although they are not completely satisfied with the current form of the Polish taxation system. Meanwhile, 55% of the respondents were not ready to accept new regulations, while around 20% might accept reforms. In general, most of the farmers questioned chose different concepts of taxation system reforms, but the most preferred option (34.52%) was to abolish agricultural tax and replace it with a land tax. However, 27% supported the opinion that the current taxation system was proper and did not need any change. Obviously, this may be underpinned by worries, which are an invariable component of change. Our respondents attributed their fears to the following risks: increased bureaucracy, higher taxes, lower incomes. Many (42.64%) are also afraid of a greater number of tax inspections or difficulties calculating correct amounts of due taxes.

REFERENCES

Brodzińska, K. (2014). Rolnictwo ekologiczne – tendencje i kierunki zmian. Zeszyty Naukowe SGGW. Problemy Rolnictwa Światowego, 3, 27–36.

Chlebicka, A., Lewandowski-Lepak, R. (2012). Objęcie dochodów z działalności rolniczej podatkiem dochodowym od osób fizycznych w Polsce. Roczniki Naukowe SERiA, 14, 38–41.

Cholewa, I., Nachtman, G. (2014). Analiza przewidywanych skutków wprowadzenia reformy podatkowej w polskim rolnictwie na tle rozwiązań niemieckich. Zagadnienia Ekonomiki Rolnej, 2, 104–126.

Cnossen, S. (2018). VAT and agriculture: lessons from Europe. International Tax and Public Finance, 25 (2), 519–551.

Dziemianowicz, R. (2007). Ocena polskich rozwiązań w zakresie opodatkowania rolnictwa na tle systemów obowiązujących w wybranych krajach Unii Europejskiej. Zeszyty Naukowe SGGW. Problemy Rolnictwa Światowego, 2 (17), 184–194.

Forfa, M. (2011). Obciążenia fiskalne gospodarstw rolniczych w zależności od wielkości ekonomicznej oraz typu rolniczego. Zeszyty Naukowe SGGW. Ekonomika i Organizacja Gospodarki Żywnościowej, 92, 89–102.

Ganc, M., Mądra, M. (2011). Sprawiedliwość opodatkowania rolnictwa oraz możliwości zmian w tym zakresie w opinii rolników indywidualnych. Zeszyty Naukowe SGGW. Ekonomika i Organizacja Gospodarki Żywnościowej, 89, 207–218.

Gruziel, K. (2008). Stan i kierunki zmian w opodatkowaniu gospodarstw rolniczych. Wydawnictwo SGGW, Warszawa.

GUS (2018). Rocznik Statystyczny Rzeczypospolitej Polskiej 2018. Warszawa.

Kania, J., Kapłon, A. (2014). Zrównoważenie produkcji rolniczej w wybranych gospodarstwach województwa małopolskiego. Roczniki Naukowe SERiA, 16 (4), 134–140.

Kisiel, R., Idźkowska, K. (2014). System opodatkowania rolnictwa w Polsce oraz w wybranych krajach Unii Europejskiej. Zeszyty Naukowe SGGW. Polityki Europejskie, Finanse i Marketing, 12 (61), 64–78.

Kondraszuk, T., Jaworski, J. (2017). W poszukiwaniu kryterium wyboru formy opodatkowania VAT w rolnictwie. Finanse, Rynki Finansowe, Ubezpieczenia, 1 (85), 47–58.

Kozera, A. (2017). Podatek rolny jako źródło dochodów własnych gmin wiejskich w Polsce. Roczniki Naukowe Ekonomii Rolnictwa i Rozwoju Obszarów Wiejskich, 2 (104), 76–86.

Kubot, A., Czubak, W. (2016). Perspektywa wprowadzenia podatku dochodowego w rolnictwie w ocenie rolników.

Journal of Agribusiness and Rural Development, 2 (40), 335–344.

Kulawik, J., Lelong, P-Y., Pawłowska-Tyszko, J. (Ed.), Soliwoda, M. (2013). Systemy podatkowe w krajach Unii Europejskiej. Raporty Programu Wieloletniego 2011––2014, 83. IERiGŻ-PIB, Warszawa.

Mielczarek, M. (2017). Taxation of agricultural holdings in Poland with personal income tax. Central European Review of Economics and Management, 1 (3), 107–134.

Owsiak, S. (2016). System podatkowy Polski w okresie transformacji – próba oceny. Annales Universitatis Mariae Curie-Skłodowska. Sectio H – Oeconomia, 50 (1), 15–27.

Parsche, R., Radulescu, D. (2004). Taxing Means of Agricultural Production in Germany: A Relatively High Tax Burden Compared to other Important EU Competitors. CESifo DICE Report 2, 48–54.

Pawłowska-Tyszko, J. (Ed.), Gotowska, M., Kulawik, J., Podstawka, M. (2012). Zmiany systemu podatkowego w rolnictwie. Raporty Programu Wieloletniego 2011––2014, 44. IERiGŻ-PIB, Warszawa.

Pawłowska-Tyszko, J., Augustyńska-Grzymek, I. (2016). Obciążenia finansowe dochodów gospodarstw słabych ekonomicznie w latach 2010–2012 w regionach rolniczych FADN. Studia i Prace Wydziału Nauk Ekonomicznych i Zarządzania, 45 (2), 383–395.

Pawłowska-Tyszko, J., Soliwoda, M., Pieńkowska-Kamieniecka, S., Walczak, D. (2015). Stan obecny i perspektywy rozwoju systemu podatkowego i ubezpieczeniowego polskiego rolnictwa. IERiGŻ-PIB, Warszawa.

Poczta, W., Średzińska, J., Mrówczyńska-Kamińska, A. (2009). Zeszyty Naukowe SGGW w Warszawie. Ekonomika i Organizacja Gospodarki Żywnościowej, 76, 17–30.

Prymon, K., Turowska, W. (2017). Podatek dochodowy z działalności rolniczej w Polsce. Istota, problemy, propozycje. Ekonomiczne Problemy Usług, 127, 187–197.

Urząd Statystyczny w Olsztynie (2018). Rolnictwo w województwie warmińsko-mazurskim w latach 2016–2017. Olsztyn.

Van der Veen, H., Van der Meulen, H., Bommel, K., van, Doorneweert, B. (2007). Exploring agricultural taxation in Europe. Report 02.07.2006. LEI, Haga.

Wasilewski, M., Ganc, M., Mądra-Sawicka, M. (2016). Modele skutków wprowadzenia ryczałtu od przychodów ewidencjonowanych w indywidualnych gospodarstwach rolnych. Zagadnienia Ekonomiki Rolnej, 3 (348), 129–142.

Wójtowicz, K. (2016). Propozycje zmian w systemie opodatkowania dochodów rolniczych w Polsce. Studia Ekonomiczne, 294, 212–224.

SYSTEM PODATKOWY W ROLNICTWIE I PERSPEKTYWA JEGO ZMIAN W OPINIACH ROLNIKÓW Z WOJEWÓDZTWA WARMIŃSKO-MAZURSKIEGO

STRESZCZENIE

Celem pracy jest zweryfikowanie opinii rolników na temat funkcjonującego systemu podatkowego w rolnictwie oraz stopnia ich gotowości na ewentualne wprowadzenie reform w tym systemie. Badania bezpośrednie z wykorzystaniem kwestionariusza ankiety przeprowadzono w drugiej połowie 2018 roku wśród 197 właścicieli gospodarstw rolnych z czterech powiatów w województwie warmińsko-mazurskim. Dla około 1/3 badanych rolników wprowadzenie zmian w systemie podatkowym spowodowałoby zbyt duże obciążenie finansowe w relacji do poziomu osiąganych dochodów. Rolnicy potwierdzają zasadność uprzywilejowania rolnictwa w systemie opodatkowania, z którego w tej postaci nie są w pełni zadowoleni. Jednocześnie 55% badanych nie było gotowych na przyjęcie nowych zasad funkcjonowania systemu, a reformę byłoby w stanie zaakceptować około 20% badanych. Wskazywali oni różne propozycje reform: najlepszym rozwiązaniem (34,52% badanych) byłaby likwidacja podatku rolnego i zastąpienie go podatkiem od ziemi (w wysokości 50% stawki podatku rolnego). Według 27% badanych system opodatkowania występujący obecnie jest odpowiedni i nie wymaga zmian.

Słowa kluczowe: gospodarstwa rolne, system podatkowy w rolnictwie, reforma systemu

RELATIONSHIP MARKETING AND ITS ROLE IN THE EXPERIENCE OF INTERNATIONAL STUDENTS IN THE UNITED KINGDOM HIGHER EDUCATION INSTITUTIONS

Trevor Omoruyi[1], Grażyna Rembielak[2]

[1] Chester Business School, the University of Chester
[2] Warsaw University of Technology Business School

ABSTRACT

The purpose of this study is to investigate the role of the RM approach in the experience of international students in business schools within the UK Higher Education Institutions (HEIs). The Relationship Marketing (RM) strategy has gained recognition over the years, especially within the last decade, which can be seen in the Higher Education (HE) sector. The HE sector has in recent times been highly competitive, especially in the global market. Despite this growth in competition, there has been little or no effort in the application of RM strategy by HE Institutions competing in the global marketplace for international students. The growing competition has been driven by the goal HEI's have to internationalise and attract, recruit and retain the best international students. Higher Education Institutions have become aware of the contributions that international students bring to these institutions. Hence, efforts are geared towards retaining international students. This study considers the role of using RM with international students. The relevant data was collected from face-to-face semi-structured interviews and focus groups, which were conducted with university managers and international students across four universities in the UK. The study identifies several impacts of using RM on international students' overall experience. It further highlights aspects of the RM approach that are more significant to international students' experience. The study concluded that the RM approach positively affects international student experience if effectively developed and implemented.

Key words: Relationship Marketing, Higher Education, international student, student experience retention

JEL codes: M31, I23

INTRODUCTION

Recent decades have witnessed a growing acceptance of several marketing concepts as a means of gaining and maintaining competitive advantage in the global marketplace [Plewa et al. 2016]. Internationalisation has driven the move to ensure the adoption of marketing concepts, and Higher Education Institutions (HEIs), like every other organization in the service sector, have been swift to adopt marketing models in order to remain competitive in the global market. Increasingly, HEIs have made firm progress in adopting marketing concepts to Higher Education [Helgesen 2008]. This article stems from a large study con-

Grażyna Rembielak http://orcid.org/0000-0002-6390-925X

✉ grazyna.rembielak@biznes.edu.pl

ducted with four business schools in the North West area in the United Kingdom. This article investigates the impact of the Relationship Marketing (RM) approach on international students' experience in UK HEIs. In addressing this, the study highlights key literature review of the relevant concepts within the subject area. It provides the methodological process adhered to in the course of the research. Key findings were highlighted, analysed and interpreted. Conclusions were drawn and recommendations provided for relevant stakeholders.

The marketisation of HE began in the USA and institutions within the sector are recognizing their gains. The HE sector in the UK has not been exempt from striving to internationalise, especially as they strive to sustain and gain competitive advantage in the global market [Altbach 2015]. The UK Higher Education Institutions are recognised as the second largest destination for international students after the USA.

It is very important to understand the overall contribution of international students, which goes beyond their contribution to the host university and to the country's economy [Omoruyi 2016]. The UK Higher Education as a national asset is a major contributor to the economic success and social well-being of the country. It is also a huge sector in bringing in foreign currency and contributing to the good of the world through its scientific publications and citations [O'Leary et al. 2009]. The recent immigration policy of the UK government has affected enrolment and retention of prospective non-EU students by 83% [Wiriyacosol and Lertjanyakit 2013].

The UK Government now has as a top priority the concern of trying to maximise education opportunities for genuine international students using retention as a medium [Inside Government 2012]. Consideration of the findings of this research by HEI's could improve international student retention rates, thereby contributing to the UK economy growth. This can be achieved by establishing, maintaining and enhancing relationships with stakeholders of HE. The application of this research could be beneficial to HEI's, government and the community in general as it might help them in developing their marketing strategy towards internationalisation. The outcome of this research could help HEIs, and the Government, achieve their objectives in relation to international student retention; improving the quality of education in HEIs; and increasing HEI development in the UK.

RELATIONSHIP MARKETING IN HIGHER EDUCATION INTERNATIONALISATION

Relationship Marketing has become a popular marketing strategy following the acknowledgement of the transactional marketing strategy as an insufficient tool. It evolved in the 1970s [Grönroos 1996, Pine and Gilmore 1999, Baron et al. 2010] and has been widely used in several sectors since its development. Relationship Marketing strategies are to produce customer value throughout the life span of the relationship. They are perceived to be relevant to service markets, as aspects of RM are present in all organisations including institutions of Higher Education [Grönroos 1996, Ang and Buttle 2006, Helgesen, 2008]. "Relationship Marketing is a set of marketing activities or actions that attract, motivate, and enhance existing and potential students' relationships as well as relationships with and between students' parents, relatives, friends and reference groups for the benefit of all sides concerned. Here emphasis is placed on retaining existing students until their graduation and attracting further students" [Al-Alak 2006].

Rowley [2003] suggests that relationship-building strategies should be applicable to all students and not only those with the tendency to withdraw. Gibbs [2001] stated that those involved in HE should work towards creating educational relationships rather than transactional deals between traders. Arnett et al. [2003], and Binsardi and Ekwulugo [2003] suggested the implementation of RM strategy in the marketing of HE. Oplatka and Hemsley-Brown [2004], who concluded that RM strategy is crucial for HE services since the idea promotes student involvement in the image building and marketing of the organisation, further supported the implementation of RM in the marketing of HE. Helgesen [2008] states that colleges and universities in the HE sector should consider RM if their focus is on enrollment and retention of students, stressing that RM creates value for the student and it should treat such as important throughout the lifetime of the relationship.

The RM approach has been utilised by universities for a number of reasons, which include: student retention; positive student experience; institutional image; value exchange and customer loyalty [Rojas-Méndez et al. 2009, Hemsley-Brown 2012, Sultan and Wong 2012, Sheth et al. 2015]. For the purpose of this study, retention and student experience will be a focal point of discussion. Institutions seek to retain students and increase their rates of institutional retention [Tinto 2010, 2012]. Student retention and progression linger as fundamental policy issues for the British HE system [Longden 2006].

One of the biggest challenges that HE faces is to improve student retention [Kahu and Nelson 2018, Seidman 2019]. This is becoming significant in the context of international students. Higher Education Institutions focus in recent times on enhancing the international student retention rate while ensuring that the international student experience is also very positive. The emphasis of the above statement spurs from the intense global competition of HEIs, especially as a majority of HEIs tend to be focus on internationalisation.

British universities make deliberate efforts to attract and retain international students to UK universities, especially as their contributions to the university and the UK economy in general tend to be immense [Omoruyi et al. 2014]. As a result, the use of several mechanisms, as aspects of RM, is utilized to retain and provide a positive student experience for international students. Examples of these mechanisms include student support and academic support [Tinto 2010, Bejou and Bejou 2012, Moore and Bowden-Everson 2012]. Other aspects of RM developed by universities to enhance international student experience include provision of up-to--date technologies; up-to-date facilities; effective and efficient communication; and one-to-one marketing [Ng and Forbes 2009, Asaad et al. 2014]. It is increasingly important to contribute to knowledge by addressing the vacuum in literature, which does not currently address the impact of RM on international students.

METHOD

The methodological procedure chosen for this study was a qualitative review method. The research was exploratory at the very start, with the aim of investi-gating a phenomenon that is under-researched [Collins and Hussey 2013]. The study was also explanatory and analytical, aiming to answer the "why" and "how" questions, as they apply to the implementation of the RM approach on international students. The study, after its preliminary investigations, selected four universities which cut across all classifications of universities in the UK. The selected universities are all located in the Northwest region of the UK. The selection of participants was from three stakeholder groups: university managers; academic staff; and international students. The participants from these stakeholder groups were selected using convenience, purposive and snowball sample selection technique methods. International students in the UK HEIs number over 450,000, with the Greater Manchester identified as the city with the largest number of international students in Europe. University of Manchester, for example, has the second-largest number of students in the UK.

There were three phases of research. The first phase was a preliminary study carried out by the authors to identify the universities which would be the focus of this study. The second phase was carried out through using semi-structured face-to-face interview data collection techniques to collect data from university managers (nine) and academic staff (thirteen) from the four universities reviewed. Interview protocol was developed and used as a guide whilst conducting the interviews. Key questions such as: definition of international students, international student retention, development and implementation of aspects of RM towards sustaining international student patronage and impact of RM application on student experience, were asked. The academic staff were interviewed, since they are the front-line personnel responsible for delivering most aspects of the RM approach determining student experience. The third phase of the research consisted of the use of focus groups as a data collection technique. The focus groups were conducted with international students (thirty) from the four universities reviewed, to establish how several aspects of the RM approach influence their student experience. Being an inductive inference study, an unrepresentative sample was used for this research.

The international students represented students from eighteen countries and four continents. The re-

search analysed the data collected after carefully transcribing the recorded interviews, using the coding technique [Miles et al. 2013]. A thematic analysis, using framework suggested by Clarke and Braun [2013], was conducted on the results and themes emerged, which were used as a part of the discussion of this study. Other data collected from documentation review were analysed using content analysis, as additional information to validate the data collected.

RESULTS

Several findings emerged from the analysed data. Some unique findings that emerged after analysis of the results were as follows: marketing concepts were embedded in the international student management process by the university managers; aspects of RM were implemented for several reasons, especially to retain and enhance international student experience positively; RM implementation positively influenced positive student experience; and academic staff are identified as the main determinant of the international student experience.

DISCUSSION AND ANALYSIS OF RESULTS

Results of this study clearly reflect that RM is the marketing approach universities utilise as a strategy to attract and retain international students. This finding builds on the conclusions of Helgesen [2008], who stated that universities should consider the implementation of RM approach towards the improvement of student retention. The unique aspect of this finding is that the current literature does not cover the RM approach on international students. The implication of this is that marketing HE is now essential for the growth of HEIs, and adopting an RM approach shows how much HEIs have understood that marketing HE across the globe, like every other service firm, is of great significance to them in achieving their goals. For example, universities are now more interested in establishing a long-term relationship with overseas students as compared to a one-off transaction, as in the past. This also reflects in the increasing importance for universities to engage with alumni for accreditation purposes.

The empirical study of this research found that the rationale for universities to utilize the RM approach includes: student retention; positive student experience; value exchange and customer loyalty. All of these were consistent with Sultan and Wong [2010], and Sheth et al. [2015]. The implication is that the rationale for universities to implement an RM approach with their international students, and other students, is to enable value exchange. Examples of this include universities getting funds, international market access, and a broader reputation. The value for universities to increase international student numbers includes an international student presence, where value for international students is gained by providing them with adequate support to enable them to graduate successfully within the stipulated time.

The empirical study of this research found that an RM approach affects positively on international student retention. Examples include international students completing their degrees on time; international students converting to a higher degree after completion of a lower degree; international students acting as ambassadors for their universities; and international students participating as committed members of the alumni community. This finding is unique and not currently addressed by any literature. It also builds on existing literature conclusions proposed by Ackerman and Schibrowsky [2007], Vander Schee [2010], and Powell and Rey [2015], who suggest that students who complete their degree after enrollment are classified as retained students. These literature definitions of student retention referred, however, to students in general and not necessarily to the international students.

This study also found that there are several definitions of international student retention and this tends to vary across categories of participants. The definitions of international student retention include completion; conversion; performance; attendance; employment; and alumni. These empirical findings fill the gap in the literature, which does not address the impact of RM approach on international students. Completion means international students who complete their programme of study after enrolling, within the stipulated time. Conversion means international students who convert to a higher degree in the same university after completion of a lower degree. Performance means international stu-

dents with excellent performance in their programme of study in the university. Attendance means international students having to be punctual at classes. Employment means having to employ the international students in the university after completion of their studies. Alumni in this context means international students who are committed to the alumni community of the university.

Considering all of these definitions by participants of this study, it is possible that none of the existing literatures addresses the definition of international student retention. It also helps to contribute to existing knowledge in terms of what international student retention means to several stakeholders of the university, as existing literature does not address international retention using university stakeholder perspectives. This study has adequately provided a definition of international student retention from these three different stakeholder perspectives: university managers; academic staff; and international students. This implies that there may be a need for universities to understand what retention means to all stakeholders, especially international students, and to develop policies that will help the universities improve international student retention more readily from all stakeholders' perspectives. A second implication of this finding is that operational strategies will need to be designed and developed by universities in a manner that will enhance positive international student experience in order to continue to promote international student retention across all stakeholder definitions.

In identifying those aspects of RM approach that international students deem as most significant to their retention, the empirical study of this research found that academic support and student support were significant in influencing international student retention as they assist in student integration and socialisation. These findings are consistent with those proposed by Moore and Bowden-Everson [2012]. Extra academic and student support in terms of integrating and socialising international students into the UK environment and its educational background is a unique finding that developed from the empirical studies. No literature has addressed specific academic and student support as an aspect of using an RM approach to enhance international student retention. Examples include free English language writing sessions; UK academic writing and referencing

sessions; avoiding plagiarism; visa support/guidance; and international societies and offices, which constitute typical examples of specific student support provided to international students by the university.

Other significant aspects of the RM approach include provision of up-to-date technologies; up-to-date facilities; effective and efficient communication; and one-to-one marketing. These findings build on conclusions proposed by Assad et al. [2014]. Universities can improve their RM approach to enhance the international student experience by giving academic staff the opportunity to be part of the policy development and implementation process, from international student recruitment to every other part of the process. The empirical study also found that establishing an effective point of contact, which will be manned by academic staff that has experience working with international students, will help improve the international student experience.

CONCLUSIONS

In light of this study, it can be concluded that universities use RM approach as a marketing tool. Universities utilise RM strategy with students. The implications of this conclusion are that the universities, like other service companies, utilise RM with their students and should therefore invest resources in developing a holistic RM approach with their international students. Universities mainly implement RM strategies to enable them to retain international students, while enhancing international student experience. The implication of this is that the participating business schools now understand that not every aspect of RM strategy will help retain international students and enhance international student experience; hence, they are now to develop unique aspects targeted at international students. Definitions of international student retention go beyond the conventional definition of student retention and its definition is dependent on stakeholder roles within the universities. This conclusion implies that international student retention means more than the traditional definition of retention, which concerns mainly a student staying from the start of a course to the finish.

This study found that retention of international students covers other aspects including conversion;

alumni; completion; employment; attendance, etc. The implication of this conclusion is that universities need to devote resources and have key performance indicators relating to each of the pinch points identified as affecting retention. RM approach influences positively on international student retention in the participating universities.

LIMITATIONS OF STUDY

The use of qualitative methods to collect data might have limited the outcome of the research. The use of mixed methods to gather data could improve the validity of the research. The results would likely be different if a survey was conducted with a larger number of international students. Conducting the research within one school in the university could impact the outcome of the research, since it can be argued that the application of aspects of RM on international students might bring about different student experience in other schools/faculties within the same university. A point-time study could have also impacted the outcome of the study, knowing that such studies if conducted across different points in time could lead to completely different outcomes.

AREA FOR FURTHER RESEARCH

The findings of the four universities reviewed in this regard may be seen as a snapshot which represents the current situation surrounding marketing HEIs to international students. One or more longitudinal studies could add value to understanding marketing to the international students. Additionally, different universities from different countries could be included in further research to conduct a comparative study that may assist in the development of a better understanding of the studied phenomenon.

REFERENCES

Ackerman, R., Schibrowsky, J. (2007). A business marketing strategy applied to student retention: A higher education initiative. Journal of College Student Retention: Research, Theory & Practice, 9 (3), 307–336.

Al-Alak, B.A. (2006). The impact of marketing actions on relationship quality in the higher Education sector in Jordan. Journal of Marketing for Higher Education, 16 (2), 1–23.

Altbach, P. (2015). Higher education and the WTO: Globalization run amok. International Higher Education, 23, https://doi.org/10.6017/ihe.2001.23.6593

Ang, L., Buttle, F. (2006). Customer retention management processes: A quantitative study. European Journal of Marketing, 40 (1/2), 83–99.

Arnett, D.B., German, S.D., Hunt, S.D. (2003). The identity salience model of relationship marketing success: The case of non-profit marketing. Journal of Marketing, 67 (2), 89–105.

Asaad, Y., Melewar, T.C., Cohen, G. (2014). Export market orientation in universities: Bridging the gap between export marketing and higher education. The Marketing Review, 14 (2), 145–162.

Baron, S., Conway, T., Warnaby, G. (2010): Relationship marketing: a consumer experience approach. Sage Publications, London.

Bejou, D., Bejou, A. (2012). Shared governance and punctuated equilibrium in higher education: The case for student recruitment, retention, and graduation. Journal of Relationship Marketing, 11 (4), 248–258.

Binsardi, A., Ekwulugo, F. (2003). International marketing of British education: research on the students' perception and the UK market penetration. Marketing Intelligence & Planning, 21 (5), 318–327.

Clarke, V., Braun, V. (2013). Teaching thematic analysis: Overcoming challenges and developing strategies for effective learning. The Psychologist, 26 (2), 120–123.

Collis, J., Hussey, R. (2013). Business research: A practical guide for undergraduate and postgraduate students. Palgrave Macmillan, London.

Gibbs, P. (2001). Higher education as a market: a problem or solution? Studies in Higher Education, 26 (1), 85–94.

Grönroos, C. (1996). Relationship marketing: strategic and tactical implications. Management Decision, 34 (3), 5–14.

Helgesen, Ø. (2008). Marketing for higher education: A relationship marketing approach. Journal of Marketing for Higher Education, 18 (1), 50–78.

Hemsley-Brown, J. (2012). 'The best education in the world': reality, repetition or cliché? International students' reasons for choosing an English university. Studies in Higher Education, 37 (8), 1005–1022.

Inside Government (2012). Student Recruitment and Admissions: Attracting and Retaining UK and International Students. London.

Kahu, E.R., Nelson, K. (2018). Student engagement in the educational interface: understanding the mechanisms of student success. Higher Education Research & Development, 37 (1), 58–71.

Longden, B. (2006). An institutional response to changing student expectations and their impact on retention rates. Journal of Higher Education Policy and Management, 28 (2), 173–187.

Miles, M.B., Huberman, A.M., Saldana, J. (2013). Qualitative data analysis: A methods sourcebook. Sage Publications, Incorporated.

Moore, D., Bowden-Everson, J.L.H. (2012). An appealing connection-the role of relationship marketing in the attraction and retention of students in an Australian tertiary context. Asian Social Science, 8 (14), 65–80, https://doi.org/10.5539/ass.v8n14p65

Ng, I.C., Forbes, J. (2009). Education as service: The understanding of university experience through the service logic. Journal of Marketing for Higher Education, 19 (1), 38–64.

O'Leary D., D'Agostino, V., Re, S.R., Burney, J., Hoffman, A. (2004). Virtual private lock box (U.S. Patent No 6,704,714 B1). U.S. Patent and Trademark Office, Washington, DC.

Omoruyi, T.U. (2016). An investigation into the implementation of relationship marketing on international student retention: a review of four business schools in the Greater Manchester area. Doctoral dissertation. University of Salford [typescript].

Omoruyi, T.U., Rembielak, G., Parlinska, A. (2014). International students' contribution to Business Schools in the UK HEIs. Review of Agricultural and Applied Economics, RAAE, 17 (2), 45–48.

Oplatka, I., Hemsley-Brown, J. (2004). The research on school marketing: Current issues and future directions. Journal of Educational Administration, 42 (3), 375–400.

Pine, B.J., Gilmore, J.H. (1999). The experience economy: work is theatre & every business a stage. Harvard Business Press, Boston.

Plewa, C., Ho, J., Conduit, J., Karpen, I.O. (2016). Reputation in higher education: A fuzzy set analysis of resource configurations. Journal of Business Research, 69 (8), 3087–3095, https://doi.org/10.1016/j.jbusres.2016.01.024

Powell, K.K., Rey, M.P. (2015). Exploring a resource dependency perspective as an organizational strategy for building resource capacity Implications for public higher education universities. Management in Education, 29 (3), 94–99.

Rojas-Méndez, J.I., Vasquez-Parraga, A.Z., Kara, A.L.I., Cerda-Urrutia, A. (2009): Determinants of student loyalty in higher education: A tested relationship approach in Latin America. Latin American Business Review, 10 (1), 21–39.

Rowley, J. (2003). Information marketing: seven questions. Library management, 24 (1/2), 13–19.

Seidman, A. (2019). Minority Student Retention: The Best of the "Journal of College Student Retention: Research, Theory & Practice". Routledge.

Sheth, J.N., Parvatiyar, A., Sinha, M. (2015). The conceptual foundations of relationship marketing: Review and synthesis. Journal of Economic Sociology/Ekonomicheskaya sotsiologiya, 16 (2), 119–149.

Sultan, P., Wong, H.Y. (2012). Cultures' consequences in the assessment of higher education service quality: the case of CQU, Australia. In: J. Conduit, C. Plewa, D. Wilkie (Eds.) Sharing the Cup of Knowledge. 2012 ANZMAC Conference, Adelaide.

Tinto, V. (2010). From theory to action: Exploring the institutional conditions for student retention. In: Higher education: Handbook of theory and research. Springer, Heidelberg, 51–89.

Tinto, V. (2012). Completing college: Rethinking institutional action. University of Chicago Press, Chicago.

Vander Schee, B.A. (2010). The small college enrolment officer: relationship marketing at work. Journal of Marketing for Higher Education, 20 (1), 135–143.

Wiriyacosol, S., Lertjanyakit, H. (2013). The UK Student Visa Cut and its Implication to International Education in Thailand. Business Management Dynamics, 1 (12), 15–27.

PODEJŚCIE MARKETINGU RELACJI I JEGO ROLA W DOŚWIADCZENIACH MIĘDZYNARODOWYCH STUDENTÓW W WYBRANYCH UCZELNIACH WYŻSZYCH W WIELKIEJ BRYTANII

STRESZCZENIE

Celem niniejszego artykułu jest zbadanie roli marketingu relacji w przypadku studentów zagranicznych studiujących w wybranych brytyjskich szkołach biznesu. Marketing relacji zyskał uznanie na przestrzeni ubiegłych lat, szczególnie w ciągu ostatniej dekady, o czym świadczy przykład szkolnictwa wyższego. Ostatnio zaobserwowano sporą konkurencyjność tego sektora, głównie w przypadku rynku globalnego. Pomimo zaobserwowanego wzrostu konkurencji na rynku globalnym uczelnie podejmowały niewiele wysiłku lub wcale we wdrażaniu strategii marketingu relacji w odniesieniu do studentów zagranicznych. Zjawisko rosnącej konkurencji wynika z tego, że uczelnie muszą iść w stronę umiędzynarodowienia i aby to osiągnąć, potrzebują przyciągnąć, zrekrutować i zatrzymać najlepszych studentów z zagranicy. Uczelnie uświadomiły sobie, jak duży jest wkład studentów zagranicznych w ich istnienie, stąd też ich wysiłki mają na celu zatrzymanie studentów z zagranicy. W niniejszym artykule przeanalizowano rolę, jaką odgrywa marketing relacji w przypadku studentów zagranicznych. Zebrano odpowiednie dane z częściowo ustrukturyzowanych pogłębionych wywiadów indywidualnych i z grup fokusowych. Badania te przeprowadzono wśród kierowników uniwersytetów i zagranicznych studentów z wybranych czterech uniwersytetów w Wielkiej Brytanii. Wyniki badań identyfikują kilka czynników zastosowania marketingu relacji, które wpłynęły na doświadczenia studentów zagranicznych. We wnioskach z badań podkreślono aspekty podejścia marketingu relacji, które są bardziej znaczące dla samego doświadczenia tychże studentów zagranicznych. W badaniu stwierdzono, że podejście marketingu relacji pozytywnie wpływa na doświadczenie studentów zagranicznych, pod warunkiem, że zostanie ono skutecznie przygotowane i wdrożone.

Słowa kluczowe: marketing relacji, szkolnictwo wyższe, student zagraniczny, doświadczenie studenta, retencja studentów

ORIGINAL PAPER

ASSESSMENT OF GOLD AND/OR CRUDE OIL AS INVESTMENTS FOR PORTFOLIO DIVERSIFICATION. A WARSAW STOCK EXCHANGE CASE STUDY

Marcin Potrykus[✉]

Gdańsk University of Technology

ABSTRACT

The purpose of the study is to assess whether the inclusion of investments in gold and/or crude oil improves an investment portfolio consisting of shares of enterprises included in the WIG20 index (traditional investments). All possible combinations of investment portfolios with minimal risk and maximum efficiency were tested. The portfolios were determined based on Markowitz's portfolio theory. All results were compared with a naive strategy. In total, nearly 55,000 investment portfolios consisting of three, four or five investments were constructed. The study showed that the application of portfolio theory contributes to obtaining better results than a naive strategy. The minimum risk portfolios that included gold and crude oil showed a risk reduction of 0.39 p.p. on average and a maximum cumulative loss of 7.85 p.p. on average. Portfolios with maximum efficiency achieved an average increase in the rate of return of the investment portfolio of 0.024 p.p. and an average increase in efficiency of 0.0256.

Key words: portfolio theory, minimum risk, maximum efficiency, naive strategy

JEL codes: G11, G14

INTRODUCTION

The following study assesses which of two alternative investments give the investor greater benefits. The alternative investments under consideration are gold and crude oil, and these investments are assessed both separately and together. In addition to these alternative investments, investments in companies included in the WIG20 index are also examined, as the assessment is made from the perspective of a Polish investor. In the study, in addition to the Nobel prize-winning portfolio theory by Markowitz [1952], measures such as rate of return, risk, investment efficiency (measured

by the Sharpe ratio [Sharpe 1966]), and maximum cumulative loss were also used [Bacon 2004]. The use of these measures made it possible to assess whether the application of portfolio theory allowed an investor investing on the Warsaw Stock Exchange to achieve an additional benefit. The two main investment objectives considered in the following study were: reducing investment risk and increasing investment efficiency. The purpose of the following study is, therefore, to assess whether an investment portfolio consisting of shares of enterprises included in the WIG20 index as well as gold and/or crude oil positively affects the four measures of the investment portfolio. In addition, the

Marcin Potrykus https://orcid.org/0000-0002-4547-4555

[✉] marpotry@pg.edu.pl

results obtained using portfolio theory are compared with a naive strategy to assess whether a portfolio strategy improves the investor's situation. A naive strategy is understood as a strategy for which the shares of all investments in the portfolio are equal.

According to the basic assumption of portfolio theory, adding another investment to the investment portfolio should lead to a reduction of risk if the rates of return of the considered investments are not marked by a positive correlation coefficient. Investments in gold and crude oil were selected for research in the context of the Polish stock exchange, as these investments are considered to be safe havens. This means that if the stock market falls, the return on these alternative investments stays positive, which allows better parameters of the investment portfolio to be achieved in a difficult period.

LITERATURE REVIEW

Adding investment in gold to the investment portfolio is an aspect of the alternative investment market. This topic was studied by Baur and Lucey [2010]. The authors found that gold can be treated as a hedge investment in the capital market. In addition, gold acts as a safe haven in the event of shocks in financial markets. The study analysed stock and bond markets in the USA, the UK, and Germany. The authors emphasized, however, that gold is a safe haven for the stock market, but has never been such for the bond market.

Another study by Baur and McDermott [2010] found that gold acts both as a hedge and a safe haven for major European stock markets and the USA but not for Australia, Canada, Japan, or large emerging markets such as the BRIC countries. The authors based their research on 14 capital markets (13 countries and 1 world index). A period of 30 years from 1979 to 2009 was analysed using the daily rate of return. The authors emphasized that gold has the potential to act as a stabilizing force for the global financial system by reducing losses when most needed.

The study of Anand and Madhogaria [2012] checked whether gold secures the investor's position on the capital market. The authors analysed the six capital markets of the USA, the Great Britain, Germany, Japan, India, and China. Developed and developing countries were considered separately, and the study was conducted for data from January 2002 to December 2011. The authors found a weak correlation between gold and major capital market indices.

Research devoted only to the American capital market and the role of gold can be found in Hood and Malik [2013]. On the basis of daily data from November 1995 to November 2010, the authors concluded that gold serves as a hedge and a weak safe haven for the US stock market. They also stated that in periods of extremely low or high volatility, gold does not have a negative correlation with the US stock market.

It was also checked whether gold is an investment that protects the investor against changes in exchange rates. A study was conducted by Joy [2011], in which 16 exchange rates against the US dollar were analysed based on weekly data from 10 January 1986 to 29 August 2008. It was found that during the past 23 years, gold has behaved as a hedge against the USD, but gold has been a poor safe haven.

Investment in gold and crude oil was tested in Ciner et al. [2013]. The authors tested the alternative investments in the context of the capital markets of the USA and the Great Britain using data from January 1990 to June 2010. It was found that gold as an investment can be seen as a hedge against sudden movements in capital markets, but this was not the case for crude oil.

Selmi et al. [2018] compared investment in gold and investment in bitcoin to determine which better protects the investor in the context of rapid movements on the crude oil market. The authors stated that both bitcoin and gold serve the roles of a hedge, a safe haven, and a diversifier for crude oil price movements. What is more, they concluded that by controlling for new and relevant US and global uncertainty indicators, both bitcoin and gold, but not crude oil, are assets where investors may park their cash during times of political and economic turmoil. Furthermore, the relationship between bitcoin and crude oil returns was found to be stronger than the one between gold and crude oil.

The role of gold and crude oil in the context of currency markets as well as capital markets was assessed by Śmiech and Papież [2017], using weekly data from 2 January 1995 to 28 December 2015. The authors

concluded that gold can act as a hedge for stocks in normal market conditions in all tested subperiods. Additionally, gold was generally positively correlated with bonds, while crude oil was negatively correlated with them.

As the literature review shows, the role of gold and crude oil has been evaluated in numerous studies. Despite this, no research on the participation of gold or crude oil in an optimal investment portfolio in the context of the Polish capital market has been found. The following study should, therefore, fill this gap.

DATA AND RESEARCH METHODOLOGY

The data used for the analysis was obtained from three websites, infostrefa.com – a source of stock prices for Polish companies, lbma.org – a source of gold prices, and opec.org – a source of crude oil prices.

The data were obtained for the period from 30.12.2013 to 31.07.2019. Data for Polish companies were quoted on PLN, and for gold and crude oil in USD. For each day, the logarithmic rates of return were calculated (the research was made only on the basis of percentage changes without taking into consideration exchange rate) so finally, the oldest investment prices for each time series were lost due to the following formula [Jajuga and Jajuga 2006]:

$$i = \ln P_t - \ln P_{t-1}$$

where:
i – daily logarithmic rate of return,
Pt – investment price on day t,
$Pt - 1$ – investment price on day $t - 1$.

The portfolio rate of return, the risk of the portfolio, and the Sharpe ratio were calculated from the following formulas, respectively [Dębski 2007]:

$$i_p = \sum_{k=1}^{n} i_k w_k$$

$$\sigma_p = \sqrt{\sum_{k=1}^{n} w_k^2 \sigma_k^2 + 2\sum_{k=1}^{n-1} \sum_{m=k+1}^{n} w_k w_m \sigma_k \sigma_m p_{km}}$$

$$s_p = \frac{i_p - i_f}{\sigma_p}$$

For the calculations, two additional assumptions were made:

$$\sum_{k=1}^{n} w_k = 1 \wedge w_k \geq 0$$

where:
i_p – portfolio rate of return;
i_k – rate of return from investment k;
w_k – weight of investment k in the portfolio;
σ_p – portfolio risk (standard deviation of the rate of return);
σ_k – risk of investment k (standard deviation of the rate of return);
p_{km} – coefficient of correlation of return rates on investment k and investment m;
S_p – effectiveness measure (Sharpe ratio);
i_f – risk-free rate of return;
n – number of investments in portfolio.

In turn, the maximum cumulative loss (MDD) was defined as the maximum loss an investor can suffer in the investment by buying at the highest point and selling at the lowest point [Bacon 2004].

In this paper, portfolios with three (without any alternative investments), four (with gold or with crude oil), and five (with gold and crude oil) elements were examined. Subscript "mr" was added to all portfolios with minimum risk, "me" was added to portfolios with maximum efficiency, and "n" was added to naive diversification.

The study was conducted by dividing the study period into two windows. The first is the estimation window, on the basis of which the portfolio weights were determined according to portfolio theory. The second window is the evaluation window, for which the portfolio weights were tested and for which the final results of all measures tested were obtained. The evaluation window was unchanged and always covered the period from 2 January 2018 to 31 July 2019. In this period, 394 daily rates of return were recorded. In order to obtain comprehensive conclusions, five cases were considered for the estimation window. The first estimation window covered all data from 2 January 2014 to 29 December 2017, which constituted 1,001 observations, the second window was the time interval from 2 January 2015 to 29 December

2017 (752 observations), the third was from 4 January 2016 to 29 December 2017 (501 observations), the fourth window was data for 2017 (250 observations), and the last estimation window was data from the period 3 July 2017 to 29 December 2017 (126 observations). In order to better present the results for each estimation window length, the estimation windows have been respectively given the following abbreviations: ALL; 151617; 1617; 17; 17half.

This distinction also made it possible to check whether the length of the estimation window has an impact on the diversity of the results obtained. A total of 22,800 investment portfolios with minimal risk and the same number of portfolios with maximum efficiency were constructed. This number was chosen due to the fact that there are 1,140 possible three-element combinations for companies included in the WIG20 index. In addition to the three-element portfolios for the analysed companies, for each estimation window, 1,140 portfolios consisting of three capital investments and investments in gold, 1,140 portfolios consisting of three capital investments and investments in crude oil, and 1,140 portfolios of three capital investments and investments in gold and crude oil at the same time were also created. Hence, for each of the five estimation windows, 4,560 portfolios with minimal risk and 4,560 portfolios with maximum efficiency were created. In addition, 4,560 portfolios with naive diversification were created to compare the results. These were the same as above: 1,140 portfolios for three-element portfolios consisting of investments in company shares, 1,140 portfolios consisting of capital investments and gold, 1,140 portfolios consisting of capital investments and crude oil, and 1,140 portfolios of capital investments and gold and crude oil at the same time. Altogether, nearly 55,000 investment portfolios were constructed. All calculations were carried out in the R program [Kopczewska et al. 2009].

RESEARCH RESULTS AND DISCUSSION

As stated at the beginning of this study, whether the addition of a given investment will positively affect the characteristics of the investment portfolio largely depends on the value of the linear correlation coefficient. Therefore, Table 1 presents the values of these coefficients for all the studied investments, as before, broken down into the longest estimation window and the evaluation window.

Table 1. Value of selected correlation coefficients

Investment	Longest estimation window		Evaluation window	
	gold	crude oil	gold	crude oil
ALIOR	−0.05	0.12	0.03	0.11
CCC	−0.05	0.13	0.06	0.08
CDPROJEKT	−0.07	0.10	−0.01	0.09
CYFRPLSAT	−0.07	0.12	−0.01	0.01
ENERGA	−0.02	0.08	0.06	0.09
EUROCASH	−0.01	0.06	0.07	0.05
JSW	0.02	0.14	0.07	0.11
KGHM	0.04	0.26	0.14	0.13
LOTOS	−0.03	0.10	0.04	0.13
LPP	−0.04	0.16	0.11	0.09
MBANK	−0.04	0.15	0.07	0.04
ORANGEPL	−0.01	0.13	0.13	0.03
PEKAO	−0.07	0.14	0.06	0.04
PGE	−0.04	0.11	0.05	0.12
PGNIG	−0.05	0.21	0.06	0.20
PKNORLEN	−0.05	0.02	0.03	0.04
PKOBP	−0.08	0.12	−0.02	0.08
PZU	−0.03	0.03	0.06	−0.04
SANPL	−0.02	0.13	0.07	0.09
TAURONPE	0.01	0.10	0.07	0.13
Gold	1.00	0.01	1.00	0.05
Crude oil	0.01	1.00	0.05	1.00

Source: Authors' own calculations.

Based on the data in Table 1, it can be concluded that there is no correlation between rates of return on investment in gold and other investments, as evidenced by the low and often negative values of the calculated coefficients. The same is true for crude oil investments. At the same time, it seems that gold is a better choice for diversifying the investment portfolio, as for most of the researched investments it had a lower correlation coefficient than crude oil. For gold, the average value of correlation coefficients in relation to other analysed investments was −0.03 in the longest estimation window and 0.06 in the evaluation

window. For crude oil, these measures were 0.12 and 0.08, respectively. This means that both investments can be considered as diversification investments [Potrykus 2015].

Table 2 presents the average results for portfolios created using a naive strategy. These results represent the rate of return, standard deviation, the Sharpe ratio, and maximum cumulative loss for the assessment window, assuming that the share of all investments in the portfolio was identical.

As shown in Table 2, if the investor decided to create a portfolio of only three investments in WIG20 index shares, then a naive strategy in the evaluation window would lead to a loss equal to 0.046% per day at a risk of 1.5%, efficiency at the level of –0.034, and a cumulative maximum loss of 32%. Expanding the portfolio with an investment in crude oil had a positive impact on all the measures analysed. The rate of return increased, risk decreased, efficiency increased, and the maximum cumulative loss decreased. Even more favourable results were obtained if investment in crude oil was replaced with investment in gold. For four-element portfolios, investment in gold was a better source of diversification than investment in crude oil assuming a naive strategy. However, even better results were obtained by five-element portfolios, for which the risk decreased below 1% and the cumulative loss was on average 21.3%. Despite achieving the best values for these portfolios, the rate of return and efficiency remained on average negative, which is due to the fact that most of the investments in the evaluation window had an average negative rate of return. The majority of the 20 companies – 16 – reported mean average negative returns in the evaluation window. Positive mean rates of return were recorded for gold and crude oil as well as for companies such as ORANGEPL, CYFRPLSAT, LOTOS, and CDPROJEKT.

Table 3 presents the average results of the examined portfolio characteristics for each estimation window, broken down into the strategies analysed. In virtually all cases, the application of portfolio theory contributed to obtaining better characteristics of the investment portfolio in the evaluation window than for a naive strategy. The exceptions here are portfolios created only from WIG20 shares, which on average achieved a higher risk than a naive strategy for all the estimated window lengths. Rate of return and efficiency for portfolios created only from WIG20 shares were also higher only when the estimation window was the shortest. In addition, even better results for investment risk were found for the naive strategy than for crude oil portfolios when the estimation window length was 151,617. In other cases, the use of portfolio theory achieved better results than the naive strategy. It can also be seen that the best characteristics were in the portfolios that contained gold and crude oil in addition to the shares of the analysed companies. On average, these portfolios had the highest rates of return, the lowest risk, the highest efficiency, and the lowest maximum cumulative loss.

Importantly, the inclusion of gold and crude oil in the portfolios allowed for a positive return, despite the fact that most companies had average negative returns in the evaluation window. Results were similar for the strategy that included only gold in the portfolio. It can also be seen that the shorter the estimation window, the lower the risk and maximum cumulative loss of designated portfolios. The combination of shares in companies on the WIG20 index and investment in crude oil has better portfolio characteristics than portfolios constructed only on the basis of shares or naive portfolios; however, this improvement is not as significant as in the case of investments in gold. Table 4 presents

Table 2. Values of tested measures for a naive strategy for the evaluation window

Strategy	ip_n (%)	σp_n (%)	Sp_n	DDp_n (%)
Naive without gold and crude oil	−0.046	1.50	−0.034	−32.0
Naive only with crude oil	−0.033	1.22	−0.031	−25.9
Naive only with gold	−0.028	1.15	−0.029	−25.4
Naive with gold and crude oil	−0.022	0.99	−0.027	−21.3

Source: Author's own calculations.

Table 3. Values of tested measures for portfolios with minimal risk

Measure	Strategy	Estimation window				
		ALL	151 617	1 617	17	17half
ip_mr (%)	without gold and crude oil	−0.040	−0.038	−0.035	−0.045	−0.047
	only with crude oil	−0.025	−0.026	−0.023	−0.020	−0.021
	only with gold	0.006	0.007	0.007	0.006	0.008
	with gold and crude oil	0.007	0.008	0.008	0.006	0.008
σp_mr (%)	without gold and crude oil	1.54	1.55	1.51	1.50	1.50
	only with crude oil	1.20	1.23	1.21	1.08	1.09
	only with gold	0.66	0.66	0.66	0.63	0.61
	with gold and crude oil	0.61	0.61	0.61	0.59	0.58
Sp_mr	without gold and crude oil	−0.029	−0.028	−0.026	−0.033	−0.034
	only with crude oil	−0.026	−0.025	−0.023	−0.023	−0.024
	only with gold	0.002	0.003	0.002	0.001	0.005
	with gold and crude oil	0.003	0.004	0.004	0.001	0.005
DDp_mr (%)	without gold and crude oil	−31.75	−31.65	−30.39	−31.47	−31.33
	only with crude oil	−24.71	−25.14	−24.27	−24.65	−24.83
	only with gold	−15.58	−15.46	−15.49	−15.54	−15.06
	with gold and crude oil	−13.71	−13.80	−13.63	−13.24	−12.92

Source: Author's own calculations.

Table 4. Values of tested measures for maximum efficiency portfolios

Measure	Strategy	Estimation window				
		ALL	151 617	1617	17	17half
ip_me (%)	without gold and crude oil	−0.016	−0.018	−0.022	−0.039	−0.053
	only with crude oil	−0.016	−0.006	−0.003	−0.017	−0.010
	only with gold	0.010	0.002	0.009	0.001	−0.011
	with gold and crude oil	0.010	0.002	0.011	0.002	−0.002
σp_me (%)	without gold and crude oil	2.12	2.10	1.95	1.76	1.92
	only with crude oil	2.12	1.84	1.38	1.22	1.24
	only with gold	1.44	1.43	0.95	0.80	0.86
	with gold and crude oil	1.44	1.39	0.82	0.74	0.97
Sp_me	without gold and crude oil	−0.010	−0.012	−0.016	−0.026	−0.031
	only with crude oil	−0.010	−0.007	−0.009	−0.019	−0.013
	only with gold	0.006	0.002	0.001	−0.007	−0.014
	with gold and crude oil	0.006	−0.002	0.004	−0.006	−0.009
DDp_me (%)	without gold and crude oil	−38.91	−38.77	−37.16	−35.73	−38.90
	only with crude oil	−38.91	−37.45	−30.46	−26.41	−33.90
	only with gold	−27.64	−28.37	−20.28	−17.78	−19.79
	with gold and crude oil	−27.64	−28.36	−17.19	−15.58	−26.16

Source: Author's own calculations.

the values of the studied characteristics for portfolios with maximum efficiency.

Higher performance variation was observed for portfolios with maximum efficiency than for portfolios with minimal risk. The use of portfolio theory obtained higher efficiency than a naive strategy regardless of the length of the estimation window for all the portfolios studied. This confirms the legitimacy of using portfolio theory when maximizing portfolio efficiency. A similar situation was visible for the rate of return, with one exception: for the estimation window 17, the naive strategy turned out to be more profitable than portfolios consisting only of WIG20 index shares. Other values were observed for risk measures in maximum efficiency portfolios. Here, generally, the shorter the estimation period, the lower the risk. This rule does not apply to the estimation window 17half because for the shortest estimation window, an increase in risk measure was again observed. Once more, the best results were obtained for portfolios that contained gold or gold and crude oil at the same time. This is a similar conclusion to the situation for portfolios with minimal risk. Table 5 presents the mean values of the alternative investments in designated investment portfolios, broken down into portfolios with minimal risk and maximum efficiency.

What is surprising is the fact that alternative investments constitute a significant part of optimal investment portfolios. The share of gold in portfolios with minimal risk is over 65% in portfolios containing both gold and crude oil, and over 72% in portfolios containing gold but not crude oil. On the other hand, the average share of crude oil amounted to nearly 38% in portfolios containing crude oil and less than 12% in portfolios containing both crude oil and gold. For portfolios with maximum efficiency, there was an average significant decrease in the share of investments in gold by over 20 p.p. and an increase in the share of investments in crude oil by an average of over 8 p.p. It can, therefore, be concluded that investment in gold is a source of investment risk reduction for Poland, while investment in crude oil in addition to gold is an additional value for investors seeking to maximize efficiency.

SUMMARY

Based on the research, it can be concluded that gold is a better source of investment portfolio diversification than crude oil. However, both investments are a desirable component of the investment portfolio, especially for investors seeking to maximize the effectiveness of their investment. On the other hand, gold also has assets that, in combination with the Polish market of large companies, offer benefits in reducing investment risk.

In addition, it has been demonstrated that the use of portfolio theory contributes to better results than a naive strategy. Such conclusions have been obtained on the basis of research on the rate of return, risk measured by the standard deviation of the rate of return, portfolio efficiency, and maximum cumulative loss. In portfolios with minimal risk that included gold and crude oil, compared to the naive strategy, the average portfolio interest rate increased by 0.029% per day, risk measured by standard deviation decreased by 0.39 p.p. on average, increased in efficiency by 0.034% and decreased in maximum cumulative loss by 7.85 p.p. on average. In portfolios with maximum efficiency, the use of portfolio theory compared to the naive strategy on average

Table 5. Average values of alternative investment weights in designated portfolios

Strategy	Mean weight of investment	Portfolio with (%)	
		mr	me
Only with crude oil	crude oil	37.57	41.58
Only with gold	gold	72.51	51.98
With gold and crude oil	gold	65.36	37.15
	crude oil	11.73	25.22

Source: Author's own calculations.

increased the return on investment by 0.024% and increased efficiency by 0.0256 on average.

Research shows that an investor using portfolio theory almost always gets better portfolio characteristics regardless of the length of the estimation window. However, in this study, the best results in terms of risk were obtained when the length of the estimation window did not exceed one year, while efficiency was usually higher for estimation windows longer than one year.

An important element is also the fact that the examined alternative investments constitute a significant share in designated investment portfolios. For gold, this was 56% on average in all designated portfolios, and for crude oil this was close to 26%. The share of gold increased in portfolios with minimal risk and the share of crude oil increased while maximizing efficiency.

REFERENCES

Anand, R., Madhogaria, S. (2012). Is Gold a 'Safe-Haven'? – An Econometric Analysis. Procedia Economics and Finance, 1 (12), 24–33.

Bacon, C.R. (2004). Practical Portfolio Performance Measurement and Attribution. John Wiley & Sons, New Jersey.

Baur, D.G., Lucey, B.M. (2010). Is Gold a Hedge or a Safe Haven? An Analysis of Stocks, Bonds and Gold. The Financial Review, 45, 217–229.

Baur, D.G., McDermott, T.K. (2010). Is gold a safe haven? International evidence. Journal of Banking and Finance, 34 (8), 1886–1898.

Ciner, C., Gurdgiev, C., Lucey, B.M. (2013). Hedges and safe havens: An examination of stocks, bonds, gold, oil and exchange rates. International Review of Financial Analysis, 29, 202–211.

Dębski, W. (2007). Rynek finansowy i jego mechanizmy. Podstawy teorii i praktyki. Wydawnictwo Naukowe PWN, Warszawa.

Hood, M., Malik, F. (2013). Is gold the best hedge and a safe haven under changing stock market volatility? Review of Financial Economics, 22 (2), 47–52.

Jajuga, K., Jajuga, T. (2006). Inwestycje. Instrumenty finansowe, aktywa niefinansowe, ryzyko finansowe, inżynieria finansowa. Wydawnictwo Naukowe PWN, Warszawa.

Joy, M. (2011). Gold and the US dollar: Hedge or haven? Finance Research Letters, 8 (3), 120–131.

Kopczewska, K., Kopczewski, T., Wójcik, P. (2009). Metody ilościowe. In: R. Aplikacje ekonomiczne i finansowe (I). CeDeWu.PL, Warszawa.

Markowitz, H. (1952). Portfolio Selection. The Journal of Finance, 7 (1), 77–91.

Potrykus, M. (2015). Investment in gold − safe haven, hedge or source of diversification for polish investor. Nauki o Finansach / Financial Sciences, 3 (24), 193–207.

Selmi, R., Mensi, W., Hammoudeh, S., Bouoiyour, J. (2018). Is Bitcoin a hedge, a safe haven or a diversifier for oil price movements? A comparison with gold. Energy Economics, 74, 787–801.

Sharpe, W.F. (1966). Mutual Fund Performance. The Journal of Business.

Śmiech, S., Papież, M. (2017). In search of hedges and safe havens: Revisiting the relations between gold and oil in the rolling regression framework. Finance Research Letters, 20, 238–244.

OCENA ZŁOTA I/LUB ROPY NAFTOWEJ JAKO INWESTYCJI DYWERSYFIKUJĄCYCH PORTFEL INWESTYCYJNY. STUDIUM PRZYPADKU GIEŁDY PAPIERÓW WARTOŚCIOWYCH W WARSZAWIE

STRESZCZENIE

Celem opracowania jest ocena, czy włączenie inwestycji w złoto i/lub ropę naftową pozwala poprawić charakterystyki portfela inwestycyjnego w pozostałej części składającego się z akcji przedsiębiorstw wchodzących w skład indeksu WIG20 (inwestycji tradycyjnych). Przebadano wszystkie możliwe kombinacje portfeli inwestycyjnych o minimalnym ryzyku oraz maksymalnej efektywności. Portfele wyznaczono według teorii portfelowej Markowitza. Wszystkie wyniki porównano ze strategią naiwną. Łącznie w badaniu wyznaczono blisko 55,000 portfeli inwestycyjnych, składających się z 3, 4 lub 5 inwestycji. W pracy wykazano, że zastosowanie teorii portfelowej przyczynia się do uzyskiwania lepszych rezultatów niż strategia naiwna. W portfelach o minimalnym ryzyku, w skład których wchodziły złoto i ropa naftowa, zaobserwowano średni spadek ryzyka mierzony odchyleniem standardowym o średnio 0,39 p.p. i spadek maksymalnej skumulowanej straty o średnio 7,85 p.p. W portfelach o maksymalnej efektywności uzyskano średni wzrost stopy zwrotu z portfela inwestycyjnego o 0,024% oraz średni wzrost efektywności na poziomie 0,0256.

Słowa kluczowe: teoria portfelowa, minimalne ryzyko, maksymalna efektywność, strategia naiwna

SELF-GOVERNMENT BUDGETS AS A SOURCE OF FUNDING OF CULTURE AND CULTURAL HERITAGE IN POLAND: A REGIONAL PERSPECTIVE

Halina Powęska✉

Warsaw University of Life Sciences – SGGW

ABSTRACT

Territorial self-governments as structures operating on a regional and local basis are the main source for financing cultural expenditures in Poland. A total of around 70% of all cultural heritage expenses came from commune, county (powiat) and voivodship budgets. Consequently, a research question was asked whether and to what extent the financing of culture from the budgets of territorial self-governments is spatially diverse. The main purpose of this study is to determine the regional differentiation of spending on culture and cultural heritage from local government budgets. An attempt was also made to indicate the reasons for these differences. For statistical analyses the data of the Local Data Bank of the Statistics Poland (Główny Urząd Statystyczny) were used. Regional differentiation was demonstrated regarding the share of culture in the expenditure from local government budgets. The spatial distribution of the phenomenon is the result of the interaction of three factors: the level of socio-economic development, cultural potential, and cultural policy of the voivodship self-governments.

Key words: culture financing, self-government budget, types of local governments in Poland

JEL codes: R51, Z11, P34

INTRODUCTION

The problems of the use cultural heritage for the needs of socio-economic development are being considered in economic sciences within the sub-discipline referred to as cultural economics [Ilczuk 2014, Towse 2019]. From the point of view of local and regional development, the use of cultural assets depends on the ability to adapt them to perform new socio-economic functions [Powęska 2008, Rausch 2008, 2010, Tubadji et al. 2015]. Cultural heritage plays an important role in shaping the socio-economic landscape, which

is also important from the point of view of stimulating regional identity [Legutko-Kobus 2016]. Incorporating tangible and intangible heritage to carry out socio-economic tasks and functions is largely due to the financial autonomy of towns and communes [Madej and Madej 2015, Satoła et al. 2019]. Culture financing is the responsibility of local governments, which receive means for this purpose by law in the form of tax subsidies [Siemiński 2012, Nocoń 2016]. Territorial self-government includes organizations of local (communes, county – powiat, cities with county rights) and regional (voivodship) society in which residents form

Halina Powęska https://orcid.org/0000-0002-6122-9517

✉halina_poweska@sggw.pl

a community and decide on the implementation of tasks. Subsidies received by local governments from the central budget are not always sufficient for financing the necessary tasks and works aimed at adaptation of historical objects to current needs while preserving the historical nature of the objects. That is why the authorities of local governments allocate additional funds for cultural purposes, which, with a large diversity of local budgets, leads to regional differences in the funding levels of cultural heritage.

The main purpose of the study is to determine the level of regional diversification in funding culture and cultural heritage from the budgets of local governments and to attempt to show the reasons for the existing differences in this respect. Within the main objective, two specific objectives were adopted: (1) to study the share of culture and cultural heritage in total budget expenditure by treating all local governments together; and (2) to study differences in cultural expenses between administrative types of local governments (commune, county, voivodship self-governments, and cities with county rights) within individual voivodships in Poland.

MATERIAL AND METHODS

The analysis was carried out using the data of the Local Data Bank of the Statistics Poland (Główny Urząd Statystyczny) in the Public Finance and Population categories. In the Public Finance category (K27) data was obtained in the following groups: Total Budget Expenditure, Expenditure of municipal budgets and budget expenditure of cities with county rights (G425), Expenditure of county budgets (G197), and Expenditure of voivodship budgets (G201) in the sections 921 – Culture and Cultural Heritage Protection (P2639, P1538 and P1584, respectively). In the Population category, data from the Population Status group (G7) was used, with the subgroup Population by age and sex groups (P2137). The study was conducted on a regional basis for the period 2001–2018 at the voivodship level. To implement the first of the specific objectives indicated above, the statistical analysis was performed using the following indicators: increase in spending from budgets on cultural purposes (year on year), share of expenditure on culture in the budget

structure, and the value of cultural expenses per inhabitant. Depending on the level of the national average, four groups of voivodships were distinguished, and these levels were defined as: very high, high, at the national average level, below the national average. Based on the results obtained, regional trends were identified in terms of culture funding levels from local self-government budgets. When implementing the second specific objective, groups of voivodships were indicated with dominance of the particular types of self-governments in culture funding with special emphasis on rural areas.

FINDINGS OF THE STUDY

In 2018, expenses from local self-government budgets for cultural purposes in Poland amounted to around PLN 9.2 billion. Compared to 2001 – PLN 2.5 billion – it was a significant increase, which can also be seen by comparing the expenditure on culture per inhabitant: from around PLN 67 to nearly PLN 240. The nearly fourfold increase in nominal expenditure from local government budgets on cultural heritage was primarily due to the increase in the level of the revenues of local governments. Based on the nominal analysis of the value of culture expenses from local government budgets for each year, a significant relationship may be noted between the voivodship development level and the expenditure on culture (Fig. 1).

In 2018, the voivodship that definitely dominated in terms of absolute value of the expenditure on culture from local government budgets (over PLN 1.5 billion, which constituted nearly 17% of culture expenses on a national scale) was the Mazowieckie Voivodship as well as a group of voivodships (Śląskie, Małopolskie, Dolnośląskie, Wielkopolskie, Pomorskie and Łódzkie), in which the expenditure on culture ranged from PLN 0.6 to PLN 0.8 in each of them, ranging from 7 to 10% on a national scale. Those voivodships, like the Mazowieckie Voivodship, were characterized by a high level of socio-economic indicators. In the remaining voivodships, local government expenditure for cultural purposes ranged from around PLN 0.2 to nearly PLN 0.6 billion, which was definitely less important from the point of view of financing culture by the local governments on a national scale.
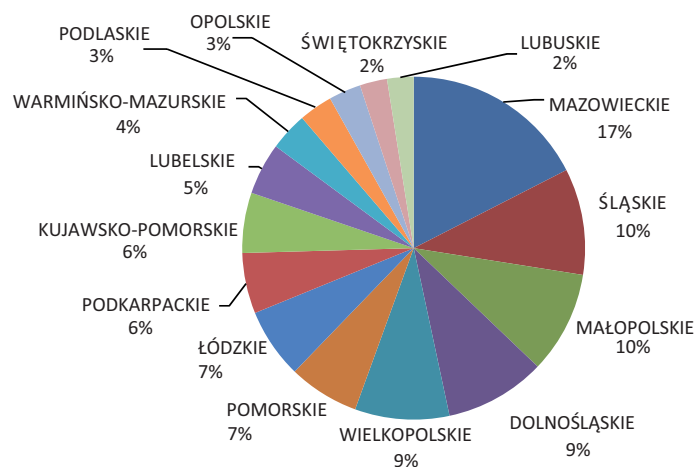
Fig. 1. The share of voivodships in the expenditure on culture and cultural heritage in Poland in 2018

Source: Author's own elaboration based on Statistics Poland data.

The share of expenditure on culture among total local government spending in the years 2001–2018, both on a national scale and in the particular voivodships, varied over time and ranged from 3 to 4% (Fig. 2), and the highest values of this indicator were recorded in the years 2010-2014. During the period under study, the highest values of the share of culture in local government expenditure were recorded in the Dolnośląskie and Opolskie Voivodships (Table 1).

Throughout the entire research period, in the first of these voivodships the share of expenditure on culture was higher than the national average, and in the years 2013–2015 it was particularly high. This should be combined with the fact that in 2016, Wrocław was the European Capital of Culture. However, in the Opolskie Voivodship the highest growth dynamics of this phenomenon was recorded: from 2.92% in 2001 to 4.30% in 2018.

A relatively high share of expenditure on culture in local government budgets in the Opolskie Voivodship is the effect of attaching great importance to the issue of identity and cultural heritage by the inhabitants of this voivodship. In the group of voivodships with a high share of expenditure on culture there were: Łódzkie, Małopolskie and Kujawsko-Pomorskie Voivodships. It is worth mentioning that in these regions, tourist and service function has been developing successfully over the past decades. The next group includes voivodships
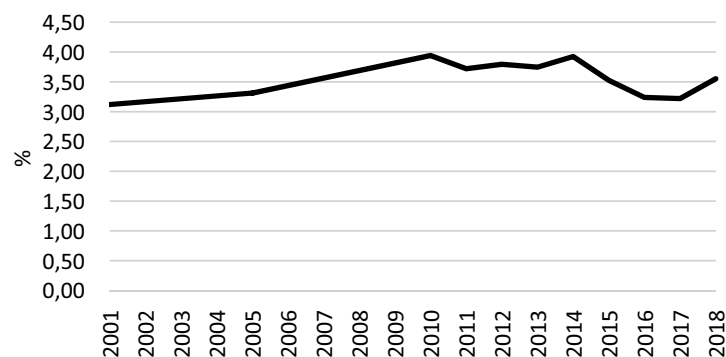
Fig. 2. Total share of the expenditure on culture in local government budgets in Poland in the period of 2001–2018

Source: Author's own elaboration based on Statistics Poland data.

Table 1. The share of expenditure on culture in local government budgets in Poland by voivodship in the period of 2001–2018

Specification	2001	2005	2010	2011	2012	2013	2014	2015	2016	2017	2018
						%					
Poland	3.12	3.31	3.94	3.72	3.79	3.75	3.93	3.52	3.24	3.22	3.55
Dolnośląskie	4.23	4.09	4.62	4.17	4.77	5.18	6.08	5.84	4.12	3.90	4.19
Kujawsko-Pomorskie	3.07	3.03	3.79	3.57	3.33	3.11	3.28	3.14	3.04	3.19	3.74
Lubelskie	2.77	2.79	3.42	3.66	4.09	3.72	4.31	3.62	3.19	3.11	3.16
Lubuskie	3.01	2.82	5.03	4.41	4.00	3.43	3.78	3.42	3.15	3.11	3.31
Łódzkie	3.28	3.13	3.69	3.91	4.42	4.13	4.06	3.18	3.14	3.12	3.80
Małopolskie	3.23	3.78	4.22	3.62	3.72	4.01	4.36	3.42	3.35	3.39	3.85
Mazowieckie	2.78	3.48	4.16	3.48	3.16	3.10	3.17	3.36	3.19	3.30	3.60
Opolskie	2.92	3.50	4.78	4.05	3.98	3.79	3.81	3.41	3.37	3.32	4.30
Podkarpackie	2.72	2.91	3.15	3.06	3.27	3.27	3.10	2.95	2.86	2.70	3.56
Podlaskie	2.86	2.90	4.42	4.65	4.23	3.34	3.25	2.97	3.24	2.98	3.31
Pomorskie	3.14	3.26	3.88	4.16	4.19	4.11	4.40	3.74	3.48	3.29	3.47
Śląskie	3.22	3.58	3.77	3.70	4.10	4.08	4.30	3.63	3.18	3.25	3.20
Świętokrzyskie	2.32	2.51	3.34	3.25	2.88	2.93	3.02	2.57	2.53	2.53	2.81
Warmińsko-Mazurskie	2.70	2.77	3.58	3.33	3.22	2.81	2.89	2.60	2.69	2.81	3.30
Wielkopolskie	3.61	3.18	3.57	3.69	3.64	3.74	3.70	3.34	3.26	3.20	3.41
Zachodniopomorskie	2.82	3.15	4.03	3.68	4.07	4.33	3.98	3.57	3.22	3.16	3.46

Source: Author's own elaboration based on Statistics Poland data.

in which the share of expenditure on culture in local government budgets was close to the national average. These are: Mazowieckie, Pomorskie, Wielkopolskie, Zachodniopomorskie and Podkarpacie Voivodships. Noteworthy is the fact that they are mostly voivodships with highly developed agglomeration areas and with a diverse range of the functions performed. For this reason, the need to finance a wide range of activities reduces the share of culture expenditure. However, in absolute figures, culture in these voivodships is funded at a high level. In the case of the remaining voivodships, namely, Lubelskie, Lubuskie, Podlaskie, Śląskie, Warmińsko-Mazurskie and Świętokrzyskie, in most years spending on culture from local government budgets was lower than the national average. The reasons are more diverse here and they certainly need more in-depth research.

Spending on culture from local government budgets per inhabitant (Fig. 3) on a national scale was steadily increasing during the period under consideration – from around PLN 67 in 2001 to nearly PLN 240 in 2018. The years 2001–2010 can be described as a period of slow growth, 2010–2016 as years of stagnation, and 2017–2018 as years of dynamic growth. The amounts spent from local government budgets on culture and cultural heritage per capita varied regionally (Table 2).

Among voivodships with a very high level of this indicator were: Dolnośląskie, Mazowieckie and Opolskie Voivodships. In the case of the Dolnośląskie Voivodship, pro-cultural investments were decisive in Wrocław and in the whole Voivodship in connection with the above-mentioned function of Wrocław as the European Capital of Culture in 2016. As regards the Mazowieckie Voivodship, the issue of understanding the importance of culture for regional development is affected by a high level of socio-economic development. In the case of the Opolskie Voivodship,
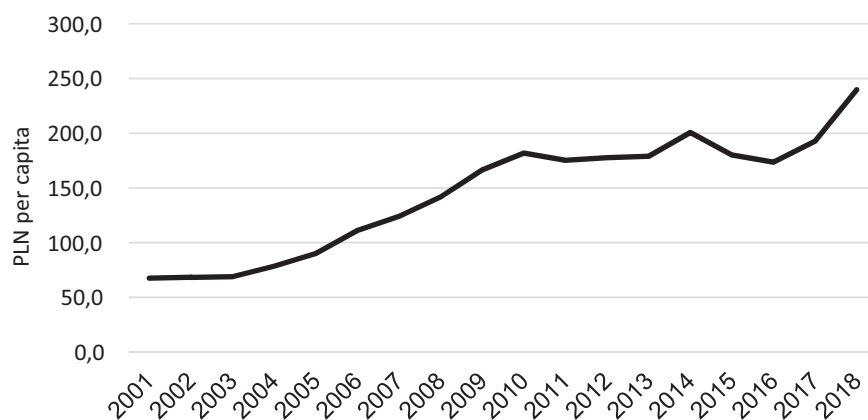
Fig. 3. Total expenditure from local government budgets in Poland in the period of 2001–2018 (nominal values)

Source: Author's own elaboration based on Statistics Poland data.

Table 2. The value of budget expenditure from local governments in the period of 2001–2018

Specification	2001	2005	2010	2011	2012	2013	2014	2015	2016	2017	2018
	PLN per capita (nominal values)										
Poland	67.5	90.1	181.8	175.3	177.7	178.9	200.7	180.1	173.6	192.7	239.8
Dolnośląskie	99.0	114.9	222.4	210.1	240.3	260.5	335.8	308.5	226.7	236.5	288.7
Kujawsko-Pomorskie	64.1	78.2	165.6	160.0	151.9	144.0	163.5	156.9	157.4	182.8	241.1
Lubelskie	53.6	66.1	146.6	163.4	177.3	168.1	219.3	178.3	158.8	174.4	203.2
Lubuskie	66.9	79.9	237.5	197.7	168.6	155.0	180.1	163.3	160.7	181.9	217.1
Łódzkie	65.5	77.2	155.8	171.2	193.8	191.3	194.8	157.6	163.1	177.5	236.2
Małopolskie	64.8	96.7	185.7	163.0	162.3	175.7	205.1	165.1	175.7	196.6	249.4
Mazowieckie	72.8	119.2	228.8	193.4	176.6	171.7	190.7	200.1	204.2	233.6	284.7
Opolskie	58.7	89.4	213.2	174.1	165.5	163.6	173.5	153.2	168.0	181.7	271.3
Podkarpackie	53.9	71.9	146.3	141.3	143.6	150.7	151.3	143.7	139.7	156.1	236.3
Podlaskie	56.4	72.3	199.0	215.1	190.2	155.3	165.7	154.3	163.9	177.4	236.9
Pomorskie	70.3	92.2	188.0	211.5	218.4	207.2	230.1	195.9	196.2	209.3	251.8
Śląskie	67.4	92.7	154.0	154.6	174.9	185.6	213.0	176.7	158.7	176.7	194.9
Świętokrzyskie	46.4	62.0	163.2	154.1	135.2	138.0	147.6	127.4	126.6	141.8	182.0
Warmińsko-Mazurskie	57.3	76.9	170.4	158.1	153.8	140.9	156.9	142.7	141.8	167.7	221.7
Wielkopolskie	75.3	84.2	156.2	167.6	159.4	165.8	167.9	155.3	170.6	190.4	224.4
Zachodniopomorskie	64.2	86.8	186.7	178.8	201.1	215.2	208.9	189.8	173.5	191.4	236.8

Source: Author's own elaboration based on Statistics Poland data.

a high rate of expenditure on culture from territorial budgets per capita is accompanied by the highest share of rural communes in these expenses in Poland. It can therefore be concluded that in rural areas of this voivodship, very much importance is attached to the issue of preservation of cultural heritage. In the group of voivodships where the value of the indicator of spending on culture from the territorial self-government funds was determined as high, there were Pomorskie and Małopolskie Voivodships. In the case of those regions great potential – of both agglomeration areas (voivodship capitals) and rural areas – was of the utmost importance. At the level of the national average there were Kujawsko-Pomorskie, Łódzkie, Podkarpackie, Podlaskie and Zachodniopomorskie. The fourth group included Lubelskie, Lubuskie, Śląskie, Świętokrzyskie, Warmińsko-Mazurskie, and Wielkopolskie Voivodships.

Based on the analysis of the third of the indicators adopted for the statistical study characterizing the place of culture in territorial self-government expenditure, that is to say the dynamics of changes in expenses on cultural purposes from local government budgets over time, a less explicit character of the phenomenon should be noted. In the voivodships with a high level of culture expenditure from budgets in absolute figures, the increase in spending on culture is decisively lower than the national average. This can be explained by the fact that in those voivodships the importance and position of culture in socio-economic life, and, at the same time, the financial means, were at a high level since the beginning of the period under review. At the same time, there were large increases in culture expenditure from budgets in the voivodships with a relatively lower level of socio-economic development, which shows increased activities aimed at cultural heritage adaptation to new tasks and functions in the development of regions. The group of voivodships with the highest increase in 2018 compared to 2001 included Małopolskie,

Table 3. Dynamics of change in the expenditure on culture by voivodship in the period of 2002–2018 (year-on-year chain indicators)

Specification	2002	2005	2010	2011	2012	2013	2014	2015	2016	2017	2018	2018 (2001 = 100)
						%						
Poland	101.1	114.7	110.3	96.4	101.4	100.6	112.1	89.6	96.4	111.0	124.3	356.9
Dolnośląskie	91.3	118.7	109.2	94.5	114.3	108.3	128.8	91.7	73.5	104.3	122.0	290.9
Kujawsko-Pomorskie	97.1	112.5	129.9	96.6	94.8	94.7	113.4	95.7	100.3	116.1	131.6	377.8
Lubelskie	96.7	109.4	115.1	111.1	108.2	94.4	129.9	81.0	88.8	109.5	116.1	364.6
Lubuskie	97.4	100.1	106.9	83.2	85.3	91.8	116.1	90.4	98.4	113.1	119.1	326.0
Łódzkie	109.3	96.7	107.0	109.5	112.8	98.2	101.5	80.6	103.1	108.5	132.5	339.7
Małopolskie	101.1	120.3	94.6	88.0	99.8	108.5	117.0	80.6	106.7	112.2	127.2	404.6
Mazowieckie	102.5	122.1	101.1	84.8	91.6	97.5	111.4	105.2	102.3	114.8	122.3	412.5
Opolskie	100.0	123.7	133.0	81.4	94.7	98.3	105.7	87.9	109.3	107.8	148.8	427.3
Podkarpackie	103.2	107.7	119.8	96.7	101.7	104.8	100.4	94.9	97.2	111.9	151.3	443.8
Podlaskie	98.2	121.7	125.0	107.9	88.2	81.4	106.4	92.8	106.1	108.1	133.2	410.0
Pomorskie	107.6	114.8	109.6	112.9	103.5	95.1	111.4	85.4	100.5	107.1	120.7	383.8
Śląskie	108.8	117.2	102.1	100.2	112.9	105.8	114.4	82.7	89.6	111.0	109.9	276.5
Świętokrzyskie	105.4	116.7	126.5	94.1	87.4	101.7	106.5	85.9	99.0	111.6	127.7	374.8
Warmińsko-Mazurskie	102.1	113.7	136.8	92.7	97.2	91.4	111.1	90.7	99.2	118.1	131.7	387.1
Wielkopolskie	94.6	107.6	120.5	107.6	95.3	104.2	101.4	92.6	110.1	111.8	118.0	310.9
Zachodniopomorskie	101.7	116.2	117.7	95.7	112.4	106.8	96.9	90.6	91.3	110.2	123.4	369.4

Source: Author's own elaboration based on Statistics Poland data.

Mazowieckie, Opolskie, Podkarpackie, and Podlaskie Voivodships (Table 3). The second group comprised voivodships in which the increase in culture expenditure was determined as high. These are: Pomorskie, Warmińsko-Mazurskie and Kujawsko--Pomorskie Voivodships. At the national average level, an increase in culture expenditure was observed in the Lubelskie, Świętokrzyskie, Zachodniopomorskie and Łódzkie Voivodships, and increases below the national average were recorded in the Dolnośląskie, Lubuskie, Śląskie and Wielkopolskie Voivodships.

Taking into consideration the results of the statistical analysis carried out in the study, a synthetic indicator of the share of culture in local government expenditure was developed (Table 4). Four levels of this indicator were distinguished:

1. **Very high level of the KwBST indicator.** This group includes voivodships in which at least two of the indicators were recorded at a very high level. These are: Mazowieckie, Dolnośląskie and Opol-

skie Voivodships. In these regions, caring for culture is a consequence of a high level of the national income indicator, and in the Opolskie Voivodship culture plays a crucial role when it comes to preserving ethnic separateness.

2. **High level of the KwBST indicator.** This group encompasses voivodships in which at least two indicators were noted at a high level. These are: Małopolskie, Pomorskie and Kujawsko-Pomorskie Voivodships. In those regions, which are also characterized by a high level of socio-economic development, as well as by high resources of cultural goods and the development of tourism function based on those resources, the situation of culture can be considered as good and suitable for development.

3. **KwBST indicator at the level of the national average.** This group includes voivodships in which at least two indicators were recorded at the level of the national average. These are: Podkarpac-

Table 4. The synthetic indicator of the share of culture in local government expenditure (KwBST) in Poland by voivodship

Level	Indicators			
	share of expenditure on culture in the budget structure	value of cultural expenses per capita	increase in spending from budgets on cultural purposes (year on year)	synthetic indicator (KwBST)
Very high	Dolnośląskie Opolskie	Dolnośląskie Mazowieckie Opolskie	Małopolskie Mazowieckie Opolskie Podkarpackie Podlaskie	Mazowieckie Dolnośląskie Opolskie
High	Małopolskie Łódzkie Kujawsko-Pomorskie	Małopolskie Pomorskie	Pomorskie Warmińsko-Mazurskie Kujawsko-Pomorskie	Małopolskie Pomorskie Kujawsko-Pomorskie
The national level	Mazowieckie Podkarpackie Pomorskie Wielkopolskie Zachodniopomorskie	Kujawsko-Pomorskie Łódzkie Podkarpackie Podlaskie Zachodniopomorskie	Lubelskie Świętokrzyskie Zachodniopomorskie Łódzkie	Podkarpackie Łódzkie Podlaskie Zachodniopomorskie
Below the national level	Lubelskie Lubuskie Podlaskie Śląskie Świętokrzyskie Warmińsko-Mazurskie	Lubelskie Lubuskie Śląskie Świętokrzyskie Warmińsko-Mazurskie Wielkopolskie	Dolnośląskie Lubuskie Śląskie Wielkopolskie	Warmińsko-Mazurskie Lubelskie Lubuskie Wielkopolskie Śląskie Świętokrzyskie

Source: Author's own study.

kie, Łódzkie, Podlaskie and Zchodniopomorskie Voivodships. It should be noted that culture expenditures from the local government budgets at the national average level permit an expansion of the scope of use of cultural heritage in socio-economic development of those regions.

4. **KwBST indicator below the national average.** This group comprises voivodships in which at least two of the indicators were below the national average level. These are: Warmińsko-Mazurskie, Lubelskie, Lubuskie, Wielkopolskie, Śląskie and Świętokrzyskie Voivodships. In these regions, the level of the use of cultural heritage should be assessed as differentiated.

When analysing the structure of budget expenditure on culture in the voivodships, depending on the type of self-government (Fig. 4), it should be stated that commune self-governments and the self-governments of cities with county rights have the highest share, while a slightly lower level of spending from voivodship self-government budgets is observed; however, the share of county self-governments is almost negligible.

In terms of expenditure structure depending on the types of local governments, four groups of voivod-

ships were distinguished. In the first of the groups, cities with county rights have the highest share. This category includes Mazowieckie and Śląskie Voivodships. In Mazovia region the cities with county rights have the highest share of budget expenses for cultural purposes, which is undoubtedly influenced by the inclusion of the capital city of Warsaw in this category. Moreover, a noticeable level of expenditure was recorded in the case of an emerging agglomeration centre of the city of Płock. In the Śląskie Voivodship, cities with county rights dominate in budget expenses for cultural purposes. Just like in Mazovia region, this is conditioned by high cultural potential of this category of local government units.

In the remaining voivodships, communes dominate in the structure of expenditure for cultural purposes, and we can talk about some differentiation; that is why three subcategories were distinguished within this group. In the first (Łódzkie, Małopolskie, Pomorskie, Kujawsko-Pomorskie and Podlaskie Voivodships), in the structure of expenditure for cultural purposes, with the dominance of the communes, cities with county rights have a significant share; one should also note a relatively high share of expenditure from the budgets of the voivodship self-
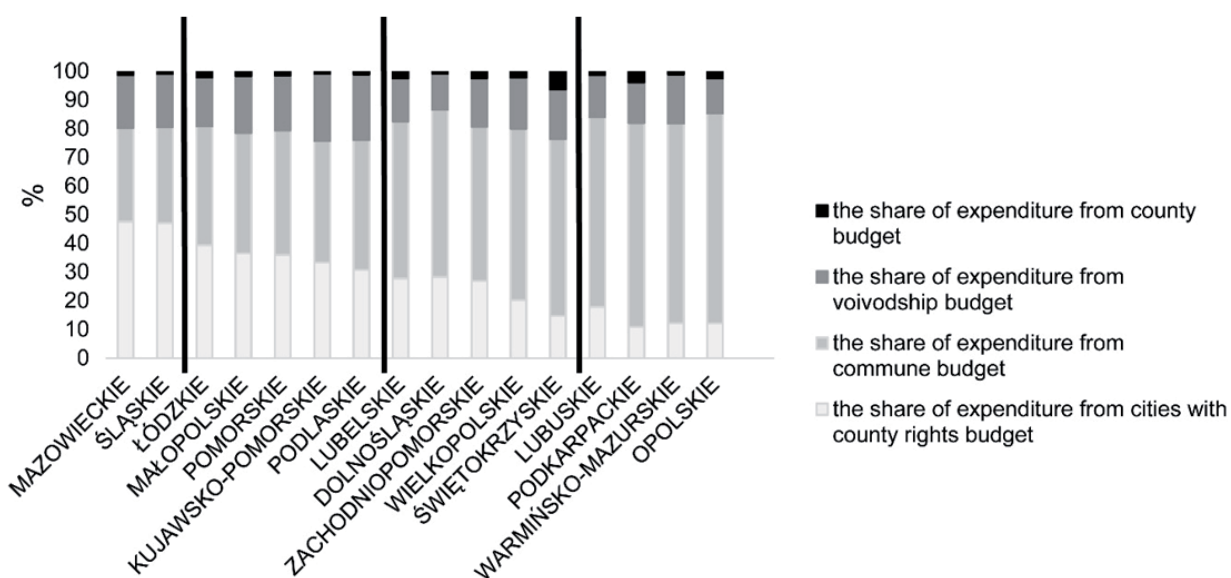
Fig. 4. The structure of budget expenditure on culture in the voivodships on the type of self-government in Poland in 2018

Source: Author's own elaboration based on Statistics Poland data.

-governments. In the next group of voivodships, a further increase in the share of communes is observed, with a decreasing share of cities with county rights and a relatively high share of voivodships. These are: Lubelskie, Dolnośląskie, Zachodniopomorskie, Wielkopolskie and Świętokrzyskie Voivodships. The dominance of communes in these regions results from a great cultural potential of rural areas, while a clearly marked share of cities with county rights is a reflection of the importance of capital cities of these voivodships on the cultural map. Another subgroup (Lubuskie, Podkarpackie, Warmińsko-Mazurskie and Opolskie Voivodships) includes voivodships with a definite dominance of communes in the structure of budget expenditure, which is a reflection of the local government structure in these areas.

In addition, it should be noted that in the case of the Mazowieckie, Małopolskie, Śląskie, Wielkopolskie, Kujawsko-Pomorskie, Pomorskie, Dolnośląskie and Łódzkie Voivodships, the expenditure on culture and cultural heritage from the budgets of the voivodship self-governments is more visible than in the case of the Podkarpackie, Zachodniopomorskie, Lubelskie, Podlaskie, Warmińsko-Mazurskie, Świętokrzyskie, Opolskie and Lubuskie Voivodships. Based on this analysis, we can say that self-governments of central voivodships spend relatively more of their budgets than those in the voivodships located in eastern and north-eastern Poland.

CONCLUSIONS

The analysis conducted in the study allowed us to formulate the following conclusions:
– Regional differentiation has been demonstrated in respect to the share of culture in the expenditure from local government budgets. Spatial distribution of the phenomenon shows that the situation of culture in the budget is the result of three factors: the level of socio-economic development, cultural potential and cultural policy of the voivodships. In the case of one of the voivodships (Dolnośląskie Voivodship), the fact that the voivodship capital performed a cultural function also played a great role.
– In culture funding from local government budgets, among all types of territorial self-governments (communes, cities with county rights, county and voivodship towns), communes had the largest share, and the voivodship with the largest share of rural areas was the Opolskie Voivodship.
– The increase in the expenditure on culture in the voivodships with a relatively lower level of socio-economic development demonstrates the growing role of culture in those voivodships.

REFERENCES

Ilczuk, D. (2014). Ekonomika kultury. Wydawnictwo Naukowe PWN, Warszawa.

Legutko-Kobus, P. (2016). Dziedzictwo kulturowe jako czynnik rozwoju i specjalizacji regionów. Studia KPZK, 170, 140–157.

Madej, S., Madej, M. (2015). Finansowanie dziedzictwa kulturowego z funduszy UE. Ekonomia. Wroclaw Economic Review, 21 (4), 43–59.

Nocoń, A. (2016). Źródła finansowania jednostek kultury, Studia Ekonomiczne. Zeszyty Naukowe Uniwersytetu Ekonomicznego w Katowicach, 256, 7–19.

Powęska, H. (2008). Sposoby wykorzystania dóbr kultury dla potrzeb rozwoju funkcji turystycznej na Mazowszu przy wsparciu z Funduszy strukturalnych. Wydawnictwo SGGW, Warszawa.

Rausch, A. (2008). Japanese Rural Revitalization: The reality and potential of cultural commodities as local brands. Japanstudien, 20 (1), 223–245.

Rausch, A. (2010). Cultural commodities in Japanese rural revitalization. Tsugaru Nuri Lacquerware and Tsugaru Shamisen. Social Sciences in Asia, 28. Brill, Leiden.

Satoła, Ł., Standar, A., Kozera, A. (2019). Financial Autonomy of Local Government Units: Evidence from Polish Rural Municipalities. Lex Localis. Journal of Local Self-Government, 2, 319–336.

Siemiński, W. (2012). Czynnik kultury jako przedmiot lokalnego zagospodarowania i planowania przestrzennego. Człowiek i Środowisko, 36 (1–2), 111–126.

Towse, R. (2019). Textbook of Cultural Economics. Cambridge University Press, Cambridge, https://doi.org/10.1017/CBO9780511992131

Tubadji, A., Osoba, B.J., Nijkamp, P. (2015). Culture-based development in the USA: culture as a factor for economic welfare and social well-being at a county level. Journal of Cultural Economics, 39 (3), 277–303.

BUDŻETY SAMORZĄDÓW TERYTORIALNYCH JAKO ŹRÓDŁO FINANSOWANIA KULTURY I DZIEDZICTWA KULTUROWEGO W POLSCE: PERSPEKTYWA REGIONALNA

STRESZCZENIE

Samorządy terytorialne jako struktury działające w regionalnym i lokalnym wymiarze są w Polsce głównym źródłem finansowania kultury. Łącznie z budżetów gminnych, powiatowych i wojewódzkich pochodziło około 70% wszelkich wydatków na cele powiązane z dziedzictwem kulturowym. Wobec powyższego postawiono pytanie badawcze, czy i na ile finansowanie kultury z budżetów samorządów terytorialnych jest zróżnicowane przestrzenie. Celem głównym badań jest więc określenie regionalnego zróżnicowania wydatków na kulturę i dziedzictwo kulturowe z budżetów samorządowych. Podjęto także próbę wskazania przyczyn tych różnic. Do analiz statystycznych wykorzystano dane Banku Danych Lokalnych GUS. Wykazano, że istnieje zróżnicowanie regionalne w zakresie udziału kultury w wydatkach z budżetów samorządów terytorialnych. Rozkład przestrzenny zjawiska jest wypadkową oddziaływania trzech czynników: poziomu rozwoju społeczno-ekonomicznego, potencjału kulturowego oraz polityki kulturowej samorządów województw.

Słowa kluczowe: finansowanie kultury, budżety samorządów terytorialnych, typy samorządów lokalnych w Polsce

THE PROMOTION SYSTEM AS A COMPETITION TOOL ON THE ALLEGRO.PL TRADING PLATFORM

Dariusz Strzębicki✉

Warsaw University of Life Sciences – SGGW

ABSTRACT

The purpose of the article is to identify the types of promotional tools used and their role in competition between sellers on the B2C and C2C trading platform called Allegro.pl. A case study of this electronic marketplace was carried out. The information needed to develop the case study came primarily from a qualitative content analysis of the Allegro.pl website. The analysis showed that Allegro.pl provides sellers with many different promotional tools to compete within this electronic market while maintaining a high level of user experience (UX). Price is an important tool for competing in this market, but the availability of promotional tools reduces its importance on the platform.

Key words: Allegro.pl, B2C electronic commerce, promotion on the Internet, electronic marketplace, Poland

JEL codes: L8, L81

INTRODUCTION

The Allegro.pl online shopping site is one of the oldest Polish companies in the e-commerce industry. It was established in 1999 as a website enabling products to be auctioned. Over time, Allegro.pl has evolved into a trading platform with a predominance of sales at a certain price. This website has been a major player in Polish e-commerce for many years. Over 125 thousand sellers post their sell offers of various products on the Allegro.pl platform [Puch 2019]. Over 20 million buyers are registered on this website and most of them make purchases [Ciemniewska 2019]. On this marketplace, products can be sold by manufacturers, wholesalers, retailers (both traditional and online e-tailers) as well as individuals. The multitude of sellers makes it a marketplace with a high level of competition. Therefore, they are forced to use price

and non-price variables, including promotional tools, to compete for customers.

The purpose of the article is to identify promotional tools and their role in competition between sellers on the Allegro.pl trading platform. The main research method is a case study of the Allegro.pl shopping site. Information from the content analysis of the Allegro.pl website was used to develop the case study. Content analysis is most often used as a quantitative method, but it can also be used as a qualitative method in which the number of occurrences of specific content is not counted [Neudorf 2002]. In this case, this method was used to deepen the research of one object, that is the Allegro.pl trading platform. The aim was to determine what kind of promotional tools this electronic marketplace pro-

Dariusz Strzębicki https://orcid.org/0000-0003-1656-4268

✉dariusz_strzebicki@sggw.pl

vides to sellers. Therefore, various types of promotional content were identified and described without counting the frequency of their use by sellers.

SALES PAGES AND THEIR PROMOTIONAL SUPPORT ON THE INTERNET

For each sales website, its relevant design and promotional support on the Internet is important, which is expressed in the concept of 6C (capture, content, community, customer orientation, commerce, credibility) [Chaffey et al. 2000]. This concept indicates that, to ensure the success of a website, it must address important factors such as: appropriate website promotion, content interesting for users, building a community on the website, designing the website with buyer segments in mind, sales support and ensuring its credibility for consumers.

Sellers have many forms of advertising to use on the Internet. Online advertising tools are constantly evolving. More and more modern banners are being created with various forms in terms of the size of the advertising space measured in pixels (px), interactivity, multimedia (e.g. video formats displaying the advertising film) and adaptations to stationary and mobile access devices [Sentance 2019]. More and more complex ad networks are emerging, bringing together many websites providing advertising sales space. Search engine advertising has a significant impact on the development of internet advertising, and is closely related to the keywords entered by Internet users in the search engine text field. The main payment models for online advertising include [Maciorowski 2013]:

– FF (flat fee) – fee for the time the ad is displayed on a website, e.g. for 10 days;
– CPM (cost per mille) – fee for one thousand ad impressions on users' screens;
– CPC (cost per click) – fee for the number of clicks on the advertisement;
– CPA (cost per action) – fee that depends on the effect of advertising in the form of a specific action by the user on the site, e.g. purchase of a product.

In Internet marketing, content posted on websites is becoming more and more important [Rancati and Gordini 2014]. The importance of content quality is so great that a new branch of marketing called content marketing has developed. A better informed consumer will feel more sympathetic to the creators of this valuable content, and may even become a loyal brand buyer. Content marketing tools can take various forms, for example, articles, reports, company blogs, instructional videos, but also good quality photos and detailed product descriptions in electronic catalogs [Muscat 2015].

Also, the element of community building is closely related to the possibility of achieving sales success. Consumers are already accustomed to various technologies and mechanisms supporting communities such as e.g. making friends (e.g. by sending messages to a given person), online interest groups, the ability to share content, expressing approval (e.g. likes) and disapproval, posts and blogs, ratings, comments and reviews [Turban et al. 2018]. These instruments contribute to the development of the community on sales pages, but also to ensure the credibility of the seller and increase transaction security [Pavlou and Dimoka 2016].

From the perspective of the quality of sales websites, the concept of UX (user experience) is also of great importance. Important elements of the UX concept are consistency and readability [Katlubeck 2014]. Consistency means that a website should be designed according to a specific template that will not confuse the user and allow him to quickly find the information he needs. In turn, readability refers to the readability of the interface, which should not be of low-importance information and unnecessary decorations.

An important feature of UX is also the utility for the internet user visiting the website [Hartson and Pyla 2012]. Therefore, the website should be interesting or allow other benefits, such as purchasing the needed product. The site should also be characterized by the right strength of persuasion, and this in turn may depend on, for example, the quality and detail of product and company information provided on it.

A component of the UX concept is also the usability concept, covering such features of websites as productivity, ease of learning, ease of use [Joo et al. 2011]. Usability refers to a situation in which a person with average skills and experience can easily guess how to proceed to perform specific tasks.

PRODUCT SEARCH AND ELEMENTS OF AN OFFER ON ALLEGRO.PL

Allegro.pl is a specific type of online sales website. When characterizing the business model of this company, such features as buyers, products, business processes, resources, place in the supply chain, income model and value proposition can be used [Turban 2006]. This is a sales website for many different consumer segments. There is also a large variety of product categories available on it. The transactions conducted are primarily of B2C nature, although C2C transactions are also common here. This service provides buyers and sellers with technical infrastructure and all the most important elements of sales pages, so that transactions can take place effectively. Allegro.pl also provides the regulatory sphere as it organizes transactions and relationships between market participants through rules, regulations, and good practices. It can therefore be concluded that it is an organized electronic market in which individuals and companies are both buyers and sellers. In the Allegro.pl distribution channel, it occupies the place closest to the consumer because it acts as an intermediary in making transactions between suppliers and consumers, most of which are transactions between retail stores and consumers. The main method of generating income through this website are commissions (transaction fees from sellers) and fees for advertising on the website. Value for consumers at Allegro.pl is that it has a large selection of products from many suppliers at a low price. Allegro.pl, like most electronic markets, is subject to a network effect. This means that as the number of users of a technology increases, the value of the technology for an average user increases [Lee 2001].

The Allegro.pl homepage is designed in such a way that potential buyers searching for products can use the search engine by entering the name of the product or its category in the text box at the top of the page. Another option is to view cataloged offers. On the left side of the screen is a list of product categories. Products are grouped thematically into categoriess, such as electronics, fashion, home and garden, child, beauty and health. After selecting one of the items, by clicking on it, we go to more detailed categories. The product search engine is more useful when the potential buyer already has a specific purchase target. In turn, the catalog in which the products are grouped thematically is more useful when the purchase target is less specified and the buyer is looking for an idea for a product.

Regardless of whether we are looking for a product through a search engine or through a catalog, in the next step we find the offer list page. To the left of the list of offers there are so-called section filters. This is a tool that allows buyers to narrow down the search results of the list of offers. The criteria for narrowing the search in the filters are adapted to the type of product.

Each item on the offer list consists of a miniature of the offer, i.e. a miniature product image (which is further expanded by hovering over the image) and basic information from the offer, such as: product name, price, price with delivery, several key product features, and a "buy now" buton. If the offer is issued by a Super Seller or is covered by the SMART free delivery program, this information will also appear here.

By clicking on one of the list items (miniatures of offers), buyers are transferred to the offer page. The offer is structured in such a way that there is a large product picture on the top left. If the seller has added more photos of this product, they can be moved using the arrows. To the right of the photo is the most important information about the offer: product name, price, badge of Super Seller, average product rating on a scale of 1–5, percentage of buyers recommending the seller, SMART program sign, information about the time of shipment and whether the delivery is free with a link to delivery details, a field to enter the number of items that we want to purchase, a button to add the product to the shopping cart, and a "buy now" button. Scrolling down the page, there are sections about other products of this seller, parameters of the product being sold, similar products of other sellers, product reviews, terms of delivery, payment, warranty, complaints and returns as well as detailed information about the seller along with comments and ratings of the seller posted by buyers.

Below this information is placed a scrolling list of miniatures of offers that similar consumers have often viewed and which therefore could be interesting for buyers.

From the buyers' perspective, an important part of the information that can be checked before making the purchase can be found in the social comments and seller ratings left by previous buyers after their purchase. A low number of comments, a high percentage of negative comments, or a low rating for various aspects of the transaction may discourage buyers from making a purchase with a given seller.

COMPETITION BETWEEN SELLERS USING PROMOTIONAL TOOLS ON THE ALLEGRO.PL ELECTRONIC MARKET

As in the case of many other electronic marketplaces, on Allegro.pl, due to the easy comparability of offers and the number of market participants, price is a significant tool for competing. Offers with lower prices are more likely to win customers than those with higher prices. However, due to the fact that the majority of sellers on this platform are retail stores, in addition to traditional methods of competition for retailers, such as the appropriate selection of products and inventory management, they can use other tools of competition, e.g. a high level of customer service, quick order processing and fast deliveries. Sellers also have at their disposal various methods and tools for promotional sales support and competing with other sellers.

At Allegro.pl, a very important element of sales is an offer. According to Allegro.pl good practices, the seller should follow specific rules in creating offers [Allegro.pl 2017a]:

− take care of the offer page so that it encourages the buyer to become familiar with it;
− avoid too many decorations and bright colors so that the page is legible and does not distract attention;
− ensure good visibility of the product name and price, and a detailed description of the product, which contains important information for buyers;
− include important additional information needed for the purchase, such as information about the company, its contact details, bank account number, important regulatory information regarding product security in transport, returns, complaints, warranty.

Allegro.pl has special requirements for such elements of the offer as [Allegro.pl 2017b]: product photos, product parameters, title, product description. In Allegro.pl offers, it is also prohibited to create references to external product offers not listed on their platform or to advertise other products sold outside the website.

The quality of offers and their compliance with the rules is monitored by Allegro.pl on an ongoing basis. In some cases, failure to comply with them may result in warnings to sellers and even account blocking. Creating offers against the rules is also bad for sellers. The content of these offers is of lower quality, which may negatively affect the purchase decision of buyers. It could also be more difficult for buyers to reach the offers because the position on search results also depends on their quality assessed on an ongoing basis by Allegro.pl.

Advertisinging tools are available to sellers in the Allegro.pl Ads Panel. It is a tool enabling the implementation of advertising campaigns within the trading platform (on Allegro.pl websites) and outside of it (in Google search engine and other advertising networks).

Advertising is an important income source of Allegro.pl, which is why sellers are encouraged to advertise. At the beginning of their sale on this site, they have a 50% price reduction for the use of certain advertising tools. Using advertising tools on Allegro.pl is often accompanied by various start-up bonuses, as is the case e.g. with Allegro.pl Ads graphic advertising. An example of encouraging advertising on the site is also the introduction of a simple, convenient and time-saving advertising system called Ads Expres. Allegro.pl also encourages intensification of advertising activities and rewards users who are active advertisers. Users who spend higher amounts of money on advertising on this website have access to additional functions in the Allegro.pl Ads Panel, such as the campaign planning tool called Campaign Planner.

There are several ways of promoting offers and products on Allegro.pl. These are Allegro Ads, distinctions, graphic advertising, Google Ads and display advertising. Allegro.pl Ads consists of displaying the offer miniature first in (at the top) the offer lists. It is marked with the sign "Sponsored". It is a type of advertisement calculated in the model for the number of CPC clicks and matched to the keywords entered in the search engine by buyers.

Distinctions is a collection of advertising methods that help distinguish the seller's offer from competing offers. These include [Allegro.pl 2018]:

– displaying a miniature of the offer at the top of the list of items in the section "List of promoted offers";
– backlight of the offer miniature with light blue background color;
– bold title font;
– posting a miniature of the offer in the section "Zone of opportunity";
– marking the offer miniature by the icon of coins – Allegro.pl Coins is a loyalty program targeted at buyers. When buying products marked with coins, consumers can exchange the collected coins for discount coupons;
– Super Seller icon – the status of Super Seller is granted to sellers applying for it and meeting specific requirements, such as the number of ratings issued by buyers (min. 100 for the last year), the number of completed transactions (min. 20 in the last 30 days), average of the graphic ratings 4.95, no warnings and account locks for violations of the regulations, and other things. This is a very important distinction of the offer because thanks to this badge placed on the offer, buyers immediately realize that they are dealing with a seller who meets high quality requirements. In addition, Super Sellers offers have better positions in offer search results. Super Sellers still have many other benefits from having this status in the form of e.g. bonus coins, access to new functions in platform systems, exclusive training, priority assistance;
– SMART icon – SMART is a free product delivery program targeted at buyers. Customers for the annual fee of PLN 49 are guaranteed free delivery of shipments from offers of sellers covered by this program. It is a program co-financed by Allegro.pl. A seller wishing to participate in this program must also meet certain requirements, particularly regarding the timely delivery of products bought.

Payments for promoting offers through distinctions are most often charged for the number of days of using it. Distinctions can also be bought in packages, e.g. displaying promoted offers (miniatures) at the top of a list + highlighting background + bold title, in one package, payable for each day of using the tools. The exception is the offer distinction with the Super Seller badge, where fees are charged on the completed transaction. Distinction with the SMART icon does not involve any fees for sellers.

Graphic advertising is the second basic type of advertising on the platform [Allegro.pl 2019c]. This is a type of Allegro.pl Ads advertisement, however, it differs from the basic format in that it is an advertisement displayed above the search results (above the list of offers), and not in the first position of the list of offers. It consists of a brand logo, an advertising slogan and two miniatures of the seller's offers. This ad is labeled "Sponsored". Payment for this graphic advertising is calculated in the CPM model as opposed to Allegro.pl Ads sponsored offers, which are paid in the CPC model. It is a solution proposed to companies that want to increase the recognition of their brand among consumers. This advertisement is managed in the Allegro.pl Ads panel, where the seller selects offers for the advertisement, determines the keywords at which it will be displayed, and sets the maximum rate in PLN for thousand impressions.

Another type of advertisement available in the Allegro.pl Ads Panel is the Google Ads campaign. The purpose of this advertisement is to promote Allegro.pl offers on Google [Allegro.pl 2019a]. A text ad with a photo of the product will appear in Google search results when an Internet user types in keywords related to the offered product. To run the campaign, sellers choose offers for advertising and set the budget and duration of the campaign. Payment for this form of advertising is calculated according to the CPC model. It is a tool that allows advertising of offers outside Allegro.pl and targeted at those Internet users who are looking for information about products in Google search engine.

The main forms of advertising discussed above have the form of miniature offers, but display advertising is also available on Allegro.pl [Allegro.pl 2019b]. This is a banner campaign settled according to the Flat Fee or CPM method depending on the type of display format. Advertising formats can both link to pages inside Allegro.pl and outside to other websites. There are several dozen graphic formats available for both desktop and mobile devices, also in

video format. For example: showcase 960 × 252 px (for desktop), showcase mobile RWD 600 × 200 px (for mobile devices), half page video 300 × 600 px (video display).

When analyzing the website of the trading platform, it should also be noted that an important way of creating content on Allegro.pl is thematic cataloging of advertisements for miniature offers. This can be seen on the home page, where most of the space is occupied by thematically grouped ads in the form of miniature offers in terms of various criteria. These groups of offers are marked with headings such as "Worth seeing", "Every hour new hits", "Toys", "For players", "Zone of opportunity", "Selected for you". Groups of offer miniatures also accompany articles written by professional authors that are created on Allegro.pl about products. They represent the product category described in the article. Links to articles can be found on many pages of the website and their role is to interest consumers in products and help them make a good purchasing decision.

CONCLUSIONS

The business model of the Allegro.pl trading platform is a cybermediary model for B2C and C2C transactions. This model is implemented by organizing an electronic marketplace in which buyers find sales offers posted by sellers and enter into transactions with them. Allegro.pl as the organizer of the electronic marketplace, acts as an intermediary in transactions, providing market participants with technical infrastructure enabling transactions on the Internet and regulates this market by creating rules of conduct for participants on this platform, monitoring this behavior and enforcing compliance with established rules.

The development of this marketplace was subject to the phenomenon of network effect. As the first such online trading platform in Poland, it managed to attract a large number of sellers and buyers, which facilitated its development. It has become the most popular shopping destination for Poles on the Internet. To further develop and cope with growing competition in online retail sales, this market must constantly ensure the best shopping conditions for consumers and sales condi-

tions for its sellers. Competition in retail electronic commerce means that Allegro.pl must strengthen its position in competition for consumers. Consumers (buyers on Allegro.pl) are the main factor that this company follows in its strategy. It is consumer loyalty that may decide in the future whether this platform will retain its strong position in domestic e-commerce and defend itself against competitors. Ensuring that consumers want to buy products on this shopping site sets Allegro.pl development directions in ensuring full satisfaction of users with all forms of interaction with their website. Allegro.pl is constantly improving its processes in order to satisfy users through ease of choosing the right products, making quick and secure transactions, and fast delivery. This also involves some obligations for sellers who must adapt to these developments in the electronic marketplace. Sellers are obliged to comply with the rules regarding the appropriate methods of preparing offers in accordance with the Allegro.pl guidelines. The standardization of offers in some aspects affects the ease of using this marketplace and the good experience for buyers. Despite a certain degree of standardization of the appearance and structure of the offer, sellers have the opportunity to compete for buyers with content in the offer through greater attention to detail of the product description and quality of photos, and the number of described specific product features. The competition tools are also comments and ratings issued by buyers to sellers. In turn, they are a derivative of the quality of customer service by sellers. This information is very important for buyers to make the final purchase decision.

To ensure good UX of the entire electronic market, sellers were provided with some subtle tools to promote offers within this market and thus compete with other sellers. The more important methods of this type include better and more visible positions of offer miniatures, distinguishing the appearance of miniatures of offers e.g. through a different background color, bold title font. An important element of competing is also the ability to mark offer miniatures with the Super Seller and SMART icons. The result is that after seeing the miniature of the offer signed by the icons in the list of offers or as an advertisement in other parts of the site, buyers can quickly realize the benefits that

accompany these offers in the form of a purchase from a reliable seller or free delivery of the product.

Content marketing by Allegro.pl on the websites of its electronic market is also of great importance for the promotion of sellers on this platform. There are two types of content marketing on this shopping site. The first is the thematic grouping of offers in sections of the page with text headers. The second is articles on products and lifestyles, which are very often accompanied by offer ad groups in the form of their miniatures. For salesmen, content marketing carried out in this way provides attractive places to advertise offers within the website, and provides a lot of valuable information about products and thus helps to encourage product purchase or make the right buying decision.

It can therefore be concluded that Allegro.pl provides sellers with promotion tools that co-create a promotional system that is compatible with a high level of content quality, website integrity, consistency and good user experience (UX). Although price competition is important in this trading platform, promotional tools available to sellers reduce the importance of price as a tool of competition.

REFERENCES

Allegro.pl (2017a). Dobre praktyki na dobry początek. Retrieved from https://allegro.pl/dla-sprzedajacych [accessed: 15.09.2019].

Allegro.pl (2017b). Nowe zasady dla ofert. Retrieved from https://allegro.pl/dla-sprzedajacych/nowe-zasady-dla-ofert [accessed: 10.09.2019].

Allegro.pl (2018). Jak się wyróżnić na Allegro? 8 lutego 2018. Retrieved from https://allegro.pl/dla-sprzedajacych/jak-sie-wyroznic-na-allegro [accessed: 18.09.2019].

Allegro.pl (2019a). Google Ads – reklamuj swoje oferty poza Allegro. Retrieved from https://allegro.pl/dla-sprzedajacych/google-ads-reklamuj-swoje-oferty-poza-allegro [accessed: 23.09.2019].

Allegro.pl (2019b). Kampania digital na Allegro. Retrieved from https://allegro.pl/reklama/digital [accessed: 12.10.2019].

Allegro.pl (2019c). Reklama graficzna – zwiększ rozpoznawalność marki. Retrieved from https://allegro.pl/dla-sprzedajacych/reklama-graficzna-zwieksz-rozpoznawalnosc-marki [accessed: 15.11.2019].

Chaffey, D., Mayer, R., Johnston, K., Ellis-Chadwick, F. (2000). Internet Marketing. Pearson Education, London.

Ciemniewska, J. (2016). Allegro.pl wg badania Gemius/PBI, 12 grudnia 2016. Polskie Badania Internetu. Retrieved from http://pbi.org.pl/raporty/allegro-witryna-firmowa [accessed: 05.11.2019].

Hartson, R., Pyla, P. (2012). The UX Book: Process and Guidelines for Ensuring a Quality User Experience. Elsevier, Waltham.

Joo, S., Lin, S., Lu, K. (2011). A Usability Evaluation Model for Academic Library Websites: Efficiency, Effectiveness and Learnability. Journal of Library and Information Studies 9 (2), 12.

Katlubeck, L. (2014). Connecting Consumers. Designing User Experience the eBay Way. Retrieved from https://www.ics.com/blog/connecting-consumers-designing-user-experience-ebay-way [accessed: 04.10.2019].

Lee, C. (2001). An analytical framework for evaluating ecommerce business models and strategies. Internet Research, 11 (4), 349–359.

Maciorowski, A. (2013). E-marketing w praktyce. Edgar, Warszawa.

Muscat, F. (2015). Content Marketing is King. In: Digital minds. Kindle Edition, WSI, 29–32.

Neudorf, K.A. (2002). The Content Analysis Guidebook. Sage Publications, Thousand Oaks.

Pavlou, P., Dimoka, A. (2016). The Nature and Role of Feedback Text Comments in Online Marketplaces: Implications for Trust Building, Price Premiums, and Seller Differentiation, Information Systems Research, 17, 393–398.

Puch, A. (2018). Firma sprzedaje na Allegro – o czym należy pamiętać? Magazyn Allegro, 11 września 2018 [accessed: 04.11.2019].

Rancati, E., Gordini, N. (2014). Content marketing metrics: theoretical aspects and empirical evidences. European Scientific Journal, 10 (34), 92–104.

Sentence, R. (2017). The evolution of display: How is advertisers' use of display advertising changing? ClickZ. Retrieved from https://www.clickz.com [accessed: 03.10.2019].

Turban, E. (2006). Electronic commerce. A managerial perspective. Pearson Prentice Hall, Upper Saddle River.

Turban, E., Outland, J., King, D., Lee, J., Liang, T., Turban, D. (2018). Electronic Commerce 2018: A Managerial and Social Networks Perspective. Springer International.

SYSTEM PROMOCJI JAKO NARZĘDZIE KONKURENCJI NA PLATFORMIE HANDLOWEJ ALLEGRO.PL

STRESZCZENIE

Celem artykułu jest identyfikacja rodzajów narzędzi promocyjnych i ich roli w konkurowaniu sprzedawców na platformie handlowej B2C i C2C zwanej Allegro.pl. Przeprowadzono studium przypadku tego rynku elektronicznego. Informacje potrzebne do jego opracowania pochodziły przede wszystkim z jakościowej analizy treści strony internetowej tego rynku. Przeprowadzona analiza pozwoliła stwierdzić, że Allegro.pl zapewnia sprzedawcom wiele różnych promocyjnych narzędzi konkurowania w obrębie rynku elektronicznego przy zachowaniu wysokiego poziomu doświadczenia użytkowników (UX). Cena jest ważnym instrumentem konkurowania na tym rynku, ale dostępne narzędzia promocyjne zmniejszają znaczenie ceny w konkurowaniu.

Słowa kluczowe: Allegro.pl, handel elektroniczny B2C, promocja w Internecie, rynek elektroniczny, Polska

DIRECTIONS OF FUNCTIONAL FOOD MARKET DEVELOPMENT IN LIGHT OF NEW CONSUMER TRENDS

Joanna Szwacka-Mokrzycka[1✉], Michał Kociszewski[2]

[1] Warsaw University of Life Sciences – SGGW
[2] KUK Polska sp. z o.o.

ABSTRACT

The main aim of the article is to present the directions of functional food market development in Poland and in the world against the background of changing patterns of consumer behaviour. The presentation of the concept and functions performed by this product category shall be the starting point. Consumer trends developed over the last decade are presented, with particular attention paid to changes in food consumer preferences and the role of marketing activities in this process. The last part of the study refers to the trends in the development of functional food in Poland compared to the world market.

Key words: functional food, consumer trends, marketing activities, prospects for the development of functional food

JEL codes: D1, D4, C23

INTRODUCTION

Functional food is a widely discussed subject, present in the subject-related literature in a multifaceted way. The pro-health effects of functional food are well considered. This is reflected in the improvement of health, well-being and the reduction of the risk of disease [Olędzka 2007, Sirtori et al. 2007]. In the last decade, a dynamic development of the functional food market has been observed both in the global and national dimension as an expression of consumer concern for health and appearance. The main aim of the article is to present the directions of functional food market development in Poland and in the world against the background of changing patterns of consumer behaviour.

MATERIAL AND METHODS

The study has been prepared on the basis of secondary data. The source of secondary data was literature on the subject, statistical studies of Statistics Poland (Główny Urząd Statystyczny) and industry reports. The presented studies were the basis for diagnosing the role and importance of functional food and the directions of its development on the world market.

CONCEPT AND FUNCTIONS OF FUNCTIONAL FOOD

The concept of functional food is defined in various ways. Research on functional foods concerns the definition of this concept, the definition of functional

Joanna Szwacka-Mokrzycka https://orcid.org/0000-0001-9243-5404

✉ joanna_szwacka@sggw.pl

foods, the impact on health and the conditions for ensuring consumer safety and behaviour.

The first research into "functional" food products was launched in Japan in 1984 in search of a link between food and pro-health benefits of its consumption. As a result of the positive results of the research, the Japanese Minister of Health approved a new food category called FOSHU (Food for Specified Health Use) in 1991. The Food and Drug Administration in the United States refers to functional foods and food components that provide health benefits in addition to their primary nutritional function. In Canada, the concept of functional food is associated with conventional foods or foods similar to traditional regular diets that, in addition to their essential nutritional functions, have proven beneficial effects on health or reduce the risk of chronic disease. Australia and New Zealand use the term 'novel food' that includes functional foods that are similar to traditional foods and are intended to be consumed as part of a normal diet, but so modified that their functions go beyond simple nutritional requirements.

The definition developed in Europe as part of The European Commission's Concerted Action on Functional Food Science in Europe (FuFoSE) Programme, coordinated by the International Life Science Institute (ILSI), is the most popular definition in use. It reads as follows: "a food may be considered functional if it has been shown to have a beneficial effect on one or more functions of the body over and above the nutritional effect and its pro-health effect should be documented by scientific studies" [Korbutowicz 2018]. The research that is conducted must be representative of the whole population in order to ensure its reliability and objectivity.

Functional foods include products with the physiological activity declared by the producers as achieved by [Lindsay 1996]:

– adding biologically active substances, such as vitamins, minerals, fibre, animal or vegetable origin compounds, to foods;
– designing new chemical compositions of food products (e.g. types of margarine containing plant sterols, inhibiting the absorption of cholesterol in the human body);
– producing preparations containing biologically active substances derived from natural plant and animal raw materials (e.g. oil extracts from red grapefruit seeds);
– use of probiotics (living microorganisms improving the composition of the intestinal microflora and increasing the natural immunity of the human body);
– reducing the energy value of food products (light products);
– replacement of fat and sugar with substances of lower-energy value.

Table 1. Type and example of functional foods

Functional foods type	Definition	Example
Fortified products	A food with extra nutrients added.	fruit juices fortified with vitamin C, milk fortified with vitamin D, calcium-fortified orange juice, mineral fortified breakfast cereals
Enriched products	A food with added nutrients in order to replace vitamins or minerals that have been lost during the manufacturing process.	refining wheat to make white flour removes several B-complex vitamins and iron that are contained in the part of the grain that is removed
Altered products	A food from which a deleterious component has been removed, reduced or replaced with another substance with beneficial effects.	fibers as fat releasers in meat or ice cream products
Enhanced commodities	A food in which one of the components has been naturally enhanced through special growing conditions, new feed composition, genetic manipulation, or otherwise.	eggs with increased omega-3 content achieved by altered chicken feed

Source: Siro et al. [2008], Shamal and Mohan [2015].

There are four main types of functional foods: fortified products, enriched products, altered products and enhanced commodities [Siro et al. 2008, Shamal and Mohan 2015] – Table 1.

Functional foods may be enriched with various pro-health bioactive substances: dietary fibre, oligosaccharides (prebiotics), polyols, choline and lecithin, proteins and peptides, polyunsaturated fatty acids, minerals, vitamins, phytochemicals with antioxidant properties (polyphenols, vitamin C, carotenoids, anthocyanins, glycosides, isoprenoids) and phytosterols and microorganisms with probiotic activity [Woźniak and Kamiński 2006].

There are four basic ways in which functional foods can improve the psychophysical well-being of consumers [Świderski and Kolanowski 2006]:
– direct influence by inhibition of degenerative changes in the system or therapeutic effect in the course of some diseases;
– supply of larger quantities of nutrients in physiological states of increased demand, e.g. intensive growth, pregnancy, convalescence, sport, extreme tourism;
– composing a proper diet in specific diseases such as allergy, diabetes, food intolerance;
– improvement of mood and increase of psychophysical efficiency of the organism.

CONSUMER TRENDS ON THE FUNCTIONAL FOOD MARKET

A trend is defined as a process of change that is seen from a psychological, economic or sociological perspective and may be short or long term and regional or global in its scope. In the long term, trends have a significant impact on consumer purchasing behaviour, which in turn leads to a change in consumption patterns. Trends are variable in time and characterized by co-existence and divergence.

The development of demand for functional food is primarily linked to eco-consumption (organic or sustainable consumption) and conscious consumption. Eco-consumption consists of deliberate efforts of individuals to minimise unfavourable effects resulting from consumption of consumer and investment goods and services through rationalisation and exploitation of production factors (resources) and the reduction of post-production and post-consumer waste generation [Nowalska 2007]. Numerous examples of organic consumption can be mentioned, such as "healthy foods", the purchase of reusable bags, transport and tourism that do not cause environmental degradation. There is a close link between eco-consumption and conscious consumption. Conscious consumption is based on responsible consumer decision-making based on knowledge of its social, environmental and political consequences. Conscious consumption not only concerns the purchase of products and services that are environmentally and human-friendly, but also involves the search for better solutions for reducing the use, sharing and reuse of products [Zalega 2013].

Significant stimuli of changes taking place in the area (size and structure) of consumption and consumer behaviours in the market are factors located in the broadly understood environment [Szwacka-Mokrzycka 2018]. The technological development, socio-demographic and economic changes in individual countries, regions and global space over the last 20 years are of leading importance here. This direction of change is indicated by many researchers, who grouped them into megatrends [Naisbitt 1982]. The directions of these changes are usually divided into three groups [Olejniczuk-Merta and Garbarski 2017]:
– the consumer market environment and the conditions it creates to meet consumer needs;
– the means of meeting needs, purchasing habits, purchasing behaviour and consumer behaviour;
– structure of purchasers' needs, their attitudes and lifestyle.

The basis for conducting research into consumer behaviour and tracking the direction of its changes is the adoption of their global character [Datamonitor. com 2004]. The research carried out in this area has been divided into two groups. The first one is behavioural behaviours and trends in the market and households. The following elements are included:
– health care;
– comfort;
– sensuality;
– individualism;
– the need to meet other people.

The second group covers changes resulting from consumer life stages, income, age, and gender. A new approach to health care and the creation of a lifestyle based on it, perceived as wellness, is of particular importance in shaping the behaviours of contemporary consumers. There are various elements at play here that have a direct and indirect impact on the physical and mental health of the consumer. The following should be mentioned in particular [Kusińska and Olejniczuk-Merta 2009]:

– taking care to purchase so-called safe products;
– purchase of local products;
– use of so-called positive diets;
– consumption of products that provide a sense of satiety;
– purchasing light products, introducing a balanced diet;
– support of authorities in the field of health care and a healthy lifestyle;
– taking action to reduce stress;
– taking care of one's external appearance;
– taking care of a healthy environment;
– independent treatment and prevention of diseases.

There is a lot of research focused on different aspects, such as food concept awareness and consumer attitude and acceptance based on qualitative and quantitative methods [Verbeke 2005, Siro et al. 2008]. According to the results of these studies, consumers in the US and Europe had inconsistent points of view regarding the acceptance of functional foods. The latest research results show that there has been a declining trend in the consumption in the US in the first decade of this century, due to decreases in taste and satisfaction [Siro et al. 2008]. Consumers in Europe were more critical in the choice of foods than Americans. European consumers viewed functional foods as "unnatural and impure", especially Danish consumers [Siro et al. 2008]. They questioned the safety of functional foods because of the artificial process of their production. A lot of studies show that acceptance of functional food depends both on their health claims and on how they taste [Verbeke 2006, Lonneker 2007, Lalor 2011, Žeželj et al. 2012].

According to different empirical studies, consumer acceptance of functional foods can be affected by socio-demographic factors, and cognitive and attitudinal factors [Verbeke 2005, Siro et al. 2008, Bornkessel et al. 2011, Jayasree 2011, Buyukkaragoz et al. 2014, Shamal and Mohan 2015]. The most important determinants of consumer acceptance are consumer knowledge and beliefs [Verbeke 2005, Del Giudice and Pascucci 2010]. Five different concepts of consumer beliefs in functional foods are summarized in Table 2.

According to the Nielsen report, the majority of European consumers (56%) believe that proper nutrition helps to maintain good health. Functional products provide natural protein, strengthen immunity and supplement vitamin deficiencies in case of fatigue, stress and overwork. Polish consumer awareness of the nutritional value of food is higher than that of the average European. Over 54% of Polish consumers carefully read the labels of selected food products, where health claims indicating the health effects to be expected are included. Health claims made on a product or food ingredient are issued by the European Food Safety Authority (EFSA). They increase consumer confidence and acceptance of a functional product [Nielsen.com 2018].

Table 2. Different concepts of consumer beliefs in functional foods

Concept of consumer beliefs in functional foods	Source
Belief in impact on personal health	Hilliam 1996
Belief in health benefit	Child 1997, Verbeke 2005
Perceived role of food for health	Bech-Larsen and Grunert 2003, Verbeke 2005, Sandmann et al. 2015
Belief in the protection from disease	Wrick 1995, Jain et al. 2014
Belief in the relationship between eating and health	Niva 2000, Racz 2013

Source: Duy Tung Bui [2015].

The search for low sugar products or their natural substitutes is an example of the manifestation of the changes in food consumer preferences over the last decade. Recently, sugar substitutes in the form of polyols, intense sweeteners (i.e. sucralose, stevia), and substances intensifying the taste of added sugars (aromas, sweet soluble fibres) have been popularized. Finally, a sign of care for health is the increase in the demand for healthy snacks. The emergence of this consumer trend is strongly linked to physical activity. It is the basis for the development of a product category that includes: healthier versions of bars, ice cream and extruded products. The convenience and pro-health trends are manifested by an increase in demand for functional food and, within this offer, for dried fruit, that is, for healthy snacks (an alternative to sweets and salty snacks). Celebrity recommendations are important in stimulating demand for these product categories. Changes in the behaviour patterns of sweets consumers are caused by the development of consumer awareness. In order to meet the expectations of the contemporary consumer, the product offer must be adjusted to the system of his preferences. These trends are reflected in the following segments of functional food buyers on the Polish market [Makała 2018]:

– consumers convinced and aware of the health impact of food – 15%;
– undecided and hesitant customers with average knowledge and rarely buying this type of food – 20%;
– consumers with a high level of knowledge about food and nutrition but least likely to buy functional food – 11%;
– consumer-testers with little knowledge rarely buying such food – 16%;
– "beauty-oriented" customers, with little knowledge of nutrition and health, but often buying functional food – 11%.

THE IMPORTANCE OF PROMOTION IN STIMULATING DEMAND FOR FUNCTIONAL FOODS

In the search for the most effective methods of reaching the addressees of promotion, companies often replace or use various promotion instruments combined.

It must be emphasised that the implemented promotion policy on the functional food market should use a complementary selection of promotion instruments. Particular importance is given to advertising and public relations activities. The use of information strategies, strengthened by recommendations of well-known experts in this field, is essential in advertising activities. In this case, these will be the recommendations of dieticians, doctors, celebrities, etc. The promotion of functional food can be prioritized through the use of authorities in health care and healthy lifestyles, as well as in disease prevention. Famous people who are of interest to certain social groups, such as actors, athletes and journalists, can play an important role in the authentication of advertising messages, especially those of an educational nature.

In the 2010s, advertising messages created with a focus on "naturalness and without preservatives" have had a leading role. This is due to growing consumer awareness of the impact of nutrition on human health. Hence the search for products with a reduced sugar, fat or salt content. This is the basis for the development of health-oriented trends, an increase in the consumption of functional food, and light products. The effectiveness of the advertising message is enhanced by the inclusion of accurate information on the packaging, together with the health claim of the product, which enhances its credibility and consumer confidence. Educational goals are also achieved through public relations activities, which disperse reliable information and create the image of functional products. Various forms of such activities can be used, such as press articles, seminars and conferences organised by the scientific community, and publicity programmes with well-known figures. Nowadays, marketing communication is based primarily on digital information transfer, wider use of the Internet and modern technologies. Social media and the aforementioned recommendations of well--known persons, experts or bloggers are becoming increasingly important in communicating with customers. This is a result of changes in consumer behaviour patterns and closer relations with consumers. The main objective of social media activities is not the sales effect, but first and foremost building the brand image by ensuring the credibility of the message.

Polish consumers choose food mainly based on taste, quality, naturalness and brand. Changes in purchasing preferences of food consumers on the Polish market are a certain reflection of the tendencies outlined on the European market. They testify to the growing awareness of customers who, through their market behaviours, influence the behaviour of manufacturers regarding transparency in the communication of product warehouses.

FUNCTIONAL FOOD MARKET IN POLAND AND WORLDWIDE

The functional food market is the fastest growing sector of the global food market. Global sales of functional food increased by USD 32 billion between 2015 and 2018. The relatively largest increase in sales occurred in the countries of North America: the USA and Canada. The world leader in the sale of functional food is Asia and the Pacific Island. The value of the functional food market in Europe in 2016 amounted to EUR 117 billion. The Polish functional food market in 2016 amounted to EUR 3.7 billion according to KPMG experts [portalspozywczy.pl 2017]. It was three times its growth compared to 2012. In light of the forecasts prepared until 2024, it can be assumed that global sales will grow at a higher rate than assumed. The forecast for the years 2019–2024 indicates an increase in sales by USD 50 billion higher than in the years 2015–2018. In turn, the European states will achieve sales of functional food in 2024, reaching USD 52 billion (Table 3).

Table 3. Functional food sales globally in 2015–2018 and forecast for 2019–2024

Specification	2015–2018*	2019–2024*
	billion USD	
Total world sales	128–160	171–253
Middle East and Africa	7–8	8–12
Central and South America	9–13	13–17
Europe	26–32	36–52
North America	34–44	45–68
Asia and Pacific Islands	51–64	70–104

*Estimated sales volumes for 2017–2018 and 2019–2024.

Source: Korbutowicz [2018].

The world market for functional food is dominated by dairy products, cereal products, functional drinks and confectionery. In Europe, dairy products (60% of share) and cereal products (30% of share) prevail, while functional beverages prevail in the USA and Japan (60% of share). The share of cereal products in the USA and Japan is 20%; confectionery products in Japan – 15%; dairy products in the USA – 30%.

In the functional food market in Japan, dairy products (14.5% per year), sports nutrition and snacks, bars and takeaways are the leading products. The seeds of hemp and teff (Abyssinian love grass) are becoming more and more popular. Hemp seeds strengthen immunity and delay the effects of ageing. Teff, in turn, regulates blood sugar levels and helps to lose weight. The functional food market in China and India is growing rapidly. In China, sales of dairy drinks (20.4% per year), sweets (10.9% per year) and energy drinks (29% per year) are on the rise. In India, sales of functional food are growing at a rate of 17.1% annually and are expected to reach USD 4 billion in 2020. The main consumers of functional food in India are city dwellers consuming sweets, breakfast cereals, sports nutrition and enriched milk and yoghurt.

As far as the European market is concerned, about 70% of functional food goes to four countries: the Great Britain, Germany, France and the Netherlands. European consumers believe that proper nutrition and diet helps to maintain good health and that is why they consume healthy foods or so-called superfoods – products with pro-health properties: broccoli, kale, sauerkraut, apples, chokeberry or chocolate. On the other hand, Polish consumers are mainly looking for products for active people, food for allergy sufferers and dietary supplements. Consumers most often buy yoghurts, juices, nectars and multivitamin fruit drinks, breakfast cereals, muesli, fruit teas and types of margarines, milk enriched with omega-3 acids, calcium, magnesium, dietary fibre, vitamins and phytosterols, and seek lactose-free milk or milk with reduced fat and sugar content. The research shows that the type of functional food consumed is closely related to the age of consumers. Consumers aged 31–40 years consume products for athletes, diabetics and persons suffering from cardiovascular diseases very often. On the other hand, younger consumers are mainly looking

for products with reduced energy value [Górecka and Jędrusek-Golińska 2019].

The dynamic development of demand for functional products in Poland is manifested by a wide range of products of this category in stores. Manufacturers expand and diversify their offers in such a way as to meet the expectations of increasingly demanding and conscious consumers. An important argument inducing consumers to buy functional food is that manufacturers provide reliable information on the packaging. Appropriate promotion of functional foods is one of the most effective ways of promoting consumer health. The content of the message addressed to consumers should be informative, rational and emotional in nature, indicate the nutritional value, health and taste qualities, substances supporting health, and the ease with which meals can be prepared. We should promote slogans concerning the variety of everyday diet, the attractiveness of products and dishes with additives of pro-health substances, the popularity of healthy lifestyle and slim silhouette [Górecka 2007].

CONCLUSIONS

Today functional foods take a significant position in food production in the world market. The sector of dairy products, non-alcoholic beverages and cereal products is characterized by particularly high sales dynamics. The rapid growth of production and consumption of functional food on the world food markets is caused on the one hand by the development of new technologies and on the other hand by health-oriented trends. Consumer interest in healthy food products has increased over the last decade as a result of an appreciation of their impact on maintaining or improving public health.

The research conducted in the USA and Europe, including Poland, confirm that health benefit beliefs play an important role in determining consumer acceptance of functional foods [Babicz-Zielińska 2010, Ding et al. 2015, Kraus 2015, Shamal and Mohan 2015, Siegrist et al. 2015]. The decisions of functional food choice relies on detailed information about the ingredients and health benefit. The likelihood to buy functional foods increase with age and knowledge [Verbeke 2005, Wansink et al. 2005, Ares et al. 2008]. In addition, in Poland, unlike the US research, the tar-

get market are families with young children and pregnant women [Babicz-Zielińska 2010]. The results of different research show that food producers should pay more attention to communicating the components and health benefit to the consumers [Van der Zanden et al. 2015]. Functional foods cannot be treated as one homogenous group. Specific types of functional foods should be addressed to different target markets with an individual communication process. Nowadays the segment of sport active people is the most developmental in Poland.

REFERENCES

Bech-Larsen, T., Grunert, K.G. (2003). The perceived healthiness of functional foods. A conjoint study of Danish, Finnish and American consumers' perception of functional foods. Appetite, 40, 9–14, https://doi.org/10.1016/S0195-6663(02)00171-X

Binns, N., Howlett, J. (2009). Functional food in Europe International developments in science and health claims. Summary report of an international symposium. 9–11.05.2007 Portomaso, Malta. European Journal of Nutrition, 48. (Suppl. 1), 3–13.

Buyukkaragoz, A. (2014). Consumers' awareness, acceptance and attitudes towards functional foods in Turkey. International Journal of Consumer Studies, 38 (6), 628––635, https://doi.org/10.1111/ijcs.12134

Childs, N.M., Poryzees, G.H. (1997). Foods that help prevent disease: Consumer attitudes and public policy implications. Journal of Consumer Marketing, 14, 433––447, https://doi.org/10.1108/07363769710186015

Datamonitor.com (2004). New Developments In Global Consumer Trends. Retrieved from http://www.datamonitor.com/Products/Free/Report/DMCM2468/020DMCM2468.htm [accessed: 27.04.2018].

Del Giudice, T., Pascucci, S. (2010). The role of consumer acceptance in the food innovation process: Young consumer perception of functional foods in Italy. International Journal on Food System Dynamics, 1 (2), 111–122.

Ding, Y., Veeman, M.M., Adamowicz, W.L. (2015). Functional food choices: Impacts of trust and health control beliefs on Canadian consumers' choices of canola oil, Food Policy, 52, 92–98, https://doi.org/10.1016/j.foodpol.2014.12.002

Duy Tung Bui (2015). Consumer Acceptance of Functional Foods in Ho Chi Minh City. Eurasian Journal of Business and Economics, 8 (16), 19–34, https://doi.org/10.17015/ejbe.2015.016.02

Górecka, D. (2007). Nowe kierunki produkcji żywności funkcjonalnej i instrumenty jej promocji. Przemysł Spożywczy, 6, 20–23.

Górecka, D., Jędrusek-Golińska, A. (2019). Rozwój rynku żywności funkcjonalnej. Agroindustry, 1. Retrieved from http://www.agroindustry.pl/index.php/2019/01/28/rozwoj-rynku-zywnosci-funkcjonalnej/UP [accessed: 30.03.2019].

Hilliam, M. (1996). Functional Foods: The Western consumer viewpoint. Nutrition Reviews, 54 (11), 189–194, https://doi.org/10.1111/j.1753-4887.1996.tb03846.x

Korbutowicz, T. (2018). Żywność funkcjonalna na świecie. Uniwersytet Szczeciński, Studia i Prace WNEIZ US, 53, Vol. 2, 209–220.

Kraus, A. (2015). Factors influencing the decisions to buy and consume functional food. British Food Journal, 117 (6), 1622–1636, https://doi.org/10.1108/BFJ-08-2014-0301

Kusińska, A., Olejniczuk-Merta, A. (Eds.) (2009). Konsumpcja w Polsce. Raport roczny. IBRKK, Warszawa.

Lalor, F., Madden, C., McKenzie, K., Wall, P.G. (2011). Health claims on foodstuffs: A focus group study of consumer attitudes. Journal of Functional Foods, 3 (1), 56–59, https://doi.org/10.1016/j.jff.2011.02.001

Lindsay, R.C. (1996). Food Additives. In: O.R. Fennema (Ed.) Food Chemistry. Marcel Dekker, New York, 768–821.

Lonneker, J. (2007). Psychological impacts of health claims on consumer perception and behaviour. Paper presented on the ILSI International Symposium on "Functional Foods in Europe – International Developments in Science and Health Claims". 9–11.05.2007, Malta.

Makała, H. (2018). Żywność funkcjonalna i jej znaczenie na współczesnym rynku. Przemysł Spożywczy, 1, 18–22.

Naisbitt, J. (1982). Megatrends. Ten New Directions Transforming Our Lives. Warner Books, Nowy York.

Nielsen.com (2018). Żywność funkcjonalna – bliżej potrzeb konsumentów. FMCG and Retail. Retrieved from https://www.nielsen.com/pl/pl/insights/article/2018/functional-food [accessed: 30.03.2019].

Niva, M. (2000). Consumers, functional foods and everyday knowledge. Paper presented on conference "Nutritionists meet Food Scientists and Technologists". 12–14.04.2000 Porto.

Nowalska, D. (2007). Rekonstrukcja wzorów zachowań konsumpcyjnych wśród kobiet na przykładzie województwa śląskiego. Instytut Socjologii Uniwersytetu Śląskiego, Katowice [typescript].

Olędzka, R. (2007). Nutraceutyki, żywność funkcjonalna – rola i bezpieczeństwo stosowania. Bromatologia i Chemia Toksykologiczna, 40, 1–8.

Olejniczuk-Merta, A., Garbarski, L. (2017). Segmentacja rynku – analiza krytyczna. In: M. Bartosik-Purgat (Ed.) Zachowania konsumentów. Globalizacja. Nowe technologie. Aktualne trendy. Otoczenie społeczno-kulturowe. Wydawnictwo Naukowe WN PWN, Warszawa.

portalspozywczy.pl (2017). Rynek żywności funkcjonalnej w Polsce wart 3,7 mld Euro. Retrieved from http://www.portalspozywczy.pl/handel/artykuly/rynek-zywnosci-funkcjonalnej-w-polsce-wart-3-7-mld-euro,150905.html [accessed: 30.10.2017].

Racz, G. (2013). Az ertekek valtozasanak es a fenntarthato fejlodes trendjenek hatasa a hazai elelmiszerfogyasztasra. PhD thesis. Szent István Egyetem, Gödöllő [typescript]. Retrieved from https://szie.hu/file/tti/archivum/Racz_Georgina_ertekezes.pdf [accessed: 30.03.2019].

Sandmann, A., Brown, J., Mau, G., Saur, M., Amling, M., Barvencik, F. (2015). Acceptance of vitamin D-fortified products in Germany. A representative consumer survey. Food Quality and Preferences, 43, 53–62, https://doi.org/10.1016/j.foodqual.2015.02.011

Shamal, S., Mohan, B.C. (2015). Functional food Acceptance in India: Socio-Demographic and Lifestyle Determinants. Paper presented on the 1st IIMA International Conference on Advances in Healthcare Management Services. Indian Institute of Management. 6–7.06.2007 Ahmedabad.

Siegrist, M., Shi, J., Giusto, A., Hartman, C. (2015). Worlds apart: Consumer acceptance of functional foods and beverages in Germany and China. Appetite, 92, 87–93, https://doi.org/10.1016/j.appet.2015.05.017

Siro, I., Kapolna, E., Kapolna, B., Lugasi, A. (2008). Functional Food. Product development, marketing and consumer acceptance – A review. Apetite, 51 (3), 456–467, https://doi.org/10.1016/j.appet.2008.05.060

Sirtori, C.R., Anderson, J.W., Sirtori, E., Arnoldi, A. (2009). Functional Food for dyslipidemia and cardiovascular system risk prevention. Nutrition Research Reviews, 22, 244–261.

Świderski, F., Kolanowski, W. (2006). Żywność funkcjonalna i dietetyczna. In: Żywność wygodna i żywność funkcjonalna. WTN, Warszawa.

Szwacka-Mokrzycka, J. (2018). Paradygmaty rozwoju żywności funkcjonalnej w Polsce. Wydawnictwo Naukowe PWN, Warszawa.

Verbeke, W. (2005). Consumer acceptance of functional foods: Sociodemographic, cognitive and attitudinal determinants. Food Quality and Preferences, 16, 45–57, https://doi.org/10.1016/j.foodqual.2004.01.001

Verbeke, W. (2006). Functional foods: Consumer willingness to compromise on taste for health? Food Quality and Preferences, 17, 126–131, https://doi.org/10.1016/j.foodqual.2005.03.003

Woźniak, W., Kamiński, E. (2006). Żywność funkcjonalna i wzbogacona w turystyce i sporcie. In: Zarządzanie i usługi w obszarze kultury fizycznej i hotelarstwa. WSHiG, Poznań.

Zalega, T. (2013). Nowe trendy i makrotrendy w zachowaniach konsumenckich gospodarstw domowych w XXI wieku. Konsumpcja i Rozwój, 2 (5), 3–21.

Žeželj, I., Milosević, J., Stojanović, Ž., Ognjanov, G. (2012). The motivational and informational basis of attitudes toward foods with health claims. Appetite, 59 (3), 960––967, https://doi.org/10.1016/j.appet.2012.09.008

KIERUNKI ROZWOJU RYNKU ŻYWNOŚCI FUNKCJONALNEJ W ŚWIETLE NOWYCH TRENDÓW KONSUMENCKICH

STRESZCZENIE

Celem przewodnim artykułu jest przedstawienie kierunków rozwoju żywności funkcjonalnej w Polsce i na świecie na tle zmieniających się wzorców zachowań konsumentów. Punktem wyjścia rozważań jest przedstawienie pojęcia i funkcji spełnianych przez tę kategorię produktową. Następnie przedstawiono nowe trendy konsumenckie w ostatnim dziesięcioleciu, ze szczególnym zwróceniem uwagi na zmiany preferencji konsumentów żywności i rolę w tym procesie działań marketingowych. Ostatnia część opracowania odnosi się do kierunków rozwoju żywności funkcjonalnej w Polsce na tle rynku światowego.

Słowa kluczowe: żywność funkcjonalna, trendy konsumenckie, działania marketingowe, perspektywy rozwoju żywności funkcjonalnej

THE ROLE OF MANAGERS IN IMPLEMENTING ETHICAL PRINCIPLES IN SELECTED ENTERPRISES OF THE WIELKOPOLSKIE VOIVODESHIP

Agnieszka Szymankowska✉

State University of Applied Sciences in Konin

ABSTRACT

In companies, it is necessary to set boundaries and norms of conduct, to supervise their implementation, and to implement them consistently through the efforts of a manager who has an impact on the activities of his employees. The research goal is to identify employee views on the implementation of ethical principles in the company, as well as to define the role of a manager in this process. A hypothesis has been formulated: in the surveyed enterprises, managers apply ethical principles resulting from ethical codes binding in the company, known to everyone. The conclusions of the primary study on a group of employees forced the hypothesis to be rejected. They also showed that ethical principles are created based on a manager's instructions or based on management/owner guidelines, and the ethical aspect is an important element of a good manager's work. The application of appropriate rules may affect the functioning of the enterprise.

Key words: human management, business ethics, ethical management

JEL codes: M12, M14, M54

INTRODUCTION

Enterprises performing their activities on the market must be aware that they operate in a specific environment and should respect the rules applicable in it. On the way to maximizing profit, care should be given to consumer interests, scarcity of resources should be taken into account, moral principles should be adhered to, and actions to protect the natural environment should be implemented, thereby maintaining responsibility for company actions in all functional areas [Kwarcińska 2015].

In the face of weakening confidence in business, resulting from earlier attempts to eliminate moral principles from economic activity, the concept of corporate social responsibility emerged, with the goal to somehow promote an ethical face. The image of an ethically acting enterprise emerges from respecting the basic premises of this idea. However, the correlation between the implementation of corporate social responsibility principles and the ethical perception of business is becoming more and more noticeable, so its effects cannot be ignored [Kwarcińska 2015]. This concept is a long-term approach to conducting business by assuming that although the main goal of the company is to maximize profit, each enterprise should be responsible for its activities and its impact on the environment. Thus, companies implementing this concept, in addition to achieving economic results, try to maximize pro-social and environmental effects in order to realize

Agnieszka Szymankowska https://orcid.org/0000-0003-0410-3165

✉a.szymankowska@wp.pl

such benefits as improving their image in the eyes of stakeholders, having a positive impact on employees, and increasing competitiveness [Leoński 2016].

Organizations showing unethical behaviour have had to deal with market forces requiring them to re-examine their policies and conduct in the business environment. This often leads to the realization that ethical leadership is the path to profitability [Moss 2002]. However, it is important to be aware of the problems that may arise as part of ethical leadership due to growing competition in the global market for business and resources [Thorton 2009]. Enterprises with concerns in this area need to look for a charismatic leader who maintains ethical principles [Mackie et al. 2006], because one of the most serious problems facing organizations today is impoverished ethical behaviour and non-existent ethical leadership [Monahan 2012]. Therefore, in the 21st century, ethical management is a requirement for managers who strive to achieve organizational excellence and efficiency [Szejniuk 2016].

At the same time, in modern organizations, due to the increasing commitment to work and people's activity, it becomes necessary to regulate business activities by implementing specific principles that result directly from the concept of ethics. People strive to set rules, but also require compliance with them, hence the need to create policies or various types of codes, including ethical ones. All these activities lead to orderliness, facilitate the setting of specific frameworks for specific tasks or initiatives, and as a consequence facilitate cooperation.

In the activities of business enterprises, a very important role in this respect is played by the manager who manages the work of his employees and thus shapes interpersonal relationships in the company, while ensuring the efficient implementation of company policies in accordance with the principles set out within it.

Due to the topicality of the issues being implemented, as well as based on the ethical problems facing organizations in the current, rapidly changing environment, the research objective of this article was to identify employee views on the implementation of ethical principles in the company, and to determine the role in this process for the manager. Therefore, re-

search was carried out among employees of selected enterprises, which were used to verify the following hypotheses:
– Hypothesis 1 – In the surveyed enterprises, managers apply ethical principles arising from the ethical codes binding in the company.
– Hypothesis 2 – The implementation of ethical principles in the company is done primarily by rewarding and punishing for specific actions.

Every entrepreneur strives to achieve competitive advantage on the market, but not everyone undertakes fully ethical actions. Not all entrepreneurs are aware that ethically questionable activities are short-lived, and in the long run only ethical behaviour can bring long-term success [Klimek 2014a]. Therefore, it is necessary to take actions to raise awareness of ethical behaviour in the business environment.

ETHICAL MANAGER IN THE ENTERPRISE

For the purposes of inference, it became necessary to attempt to define the concept of a manager, as well as to present his/her important features. The manager is a person holding managerial functions, and in particular someone who plans and makes decisions, organizes, manages and controls all resources in the company, and as a consequence implements the set goals in an efficient and effective manner.

The modern approach to management, one based on entrepreneurship, corporate social responsibility and focused on agreement and cooperation, means that it is not enough to be a good manager. One should still strive to be an entrepreneur/manager-moral leader who can combine and direct efforts and abilities to create values that build the long-term competitiveness of the company. The new approach to management requires developing the main features of a manager-leader based on the characteristics of a good manager [Mroziewski 2014]. This managerial leadership is associated with [Bartkowiak and Niewiadomski 2011]:
– creativity, entrepreneurship, simplicity, intuition, exploiting opportunities, creating and articulating visions;
– determination, sense of responsibility and courage in achieving goals and introducing innovations;

– integrity (acting in accordance with one's convictions and declarations for the good of other people), egalitarianism that promotes equality, cooperation, cohesion and community;
– analysing, perceiving potential errors and jointly defining recovery paths, determining the freedom of action and principles of teamwork;
– constant learning, listening carefully to others and sharing knowledge;
– focus on members of the organization and not on systems and structures;
– focus on building relationships, credibility, authenticity, resilience and empathy, care for subordinates and creating conditions for personal development;
– ethics of attitudes and behaviours determined by such values as: honesty, impartiality, decency, honesty, reliability, modesty, justice, generosity, serving others, encouraging them to take their own initiative, setting ambitious requirements, understanding problems in everyday work, and showing: emotional honesty, sincere concern, sincere openness to new ideas and changes.

It should also be noted that ethical management should be based on two pillars. The first pillar concerns the company's activities in complying with applicable laws. The second pillar is the protection of the rights of all employees [Szczupaczyński 2010].

Bearing in mind the need for ethical action and the above premises, organizations create special formal ethical codes, i.e. written values and ethical norms which the company follows in its activities. It certainly helps to strengthen ethical behaviour. In addition, special teams dealing with the implementation of ethical principles may also be set up, although not all enterprises decide to do so [Kubik 2012].

Enterprises that have previous experience and values to guide them and their response to various problems that arise, create a kind of vision of morality for the future [Stoner et al. 2011]. At the same time, in the minds of managers, there should be a conviction that building one's position should be based on proper conduct, not based on cunning, deception and the use of others. As a consequence, the market activity will be a variant of moral behaviour, because business and ethics should be inseparable, and this is an important guarantor of the company's success [Chwistecka-Dudek 2015].

RELATIONS BETWEEN ETHICS AND BUSINESS

More and more companies refer to ethical and social values in their activities, and responsible investors are interested not only in profit at all cost, but also in a dynamic and steady increase in the value of the company. In the face of growing awareness of the media and consumers, this increase in value is not possible without taking into account non-financial aspects of company operations [Rabiański 2013]. Therefore, socially responsible activity has become in Poland one of the criteria for assessing the value and quality of business management [Dyjas-Pokorska et al. 2011]. A socially responsible company should be defined as an organization that remains open and listens to the environment without giving up on profit-making activities. It is a company that not only cares for good relations with its clients and shareholders, but also seeks the same relations in contacts with employees, suppliers and the local community [Paliwoda-Matiolańska 2009].

An enterprise is an entity which, in order to implement its basic economic intentions, must take into account the whole environment, because the existence of other entities on the market requires it to comply with specific rules and rules of conduct, including taking responsibility for its actions [Kwarcińska 2015]. This responsibility is directly related to ethics, and in business operations to business ethics [Matuszewska 2017].

Ethics consists of standards of conduct that we are required to fulfill in personal and professional life. It defines levels of honesty, empathy and credibility, as well as other virtues that help us define our personal behaviour and image. Ethics set standards in relations with other people: in personal life with family, friends, and in professional life with colleagues, clients, employees or shareholders [Byars and Stanberry 2018]. Success at work can therefore consist of more than just making money and promoting. It can also mean treating our employees, clients and colleagues with integrity and respect. It can come from a sense of pride in engaging in fair transactions, not only because the law requires it, but because we demand it from ourselves [Byars and Stanberry 2018].

The concept of business ethics means the relationship between an enterprise and its business partners, employees and competitors. These relations must comply with applicable law and accepted rules of conduct. Unfortunately, enterprises striving to maximize profit often make controversial decisions that are contrary to the norms of social coexistence [Matuszewska 2017]. Thus, business ethics direct proceedings in which companies and their representatives comply with the law and respect the rights of their stakeholders, in particular clients, employees, and the surrounding community and the environment [Byars and Stanberry 2018].

Each organization, regardless of the type of business and scale of activity, sets its own goals and tasks, but also faces specific problems. This is significantly affected by the conditions in which companies operate. Often, excessive demands are placed on the managerial staff, in which the highest value is extremely high efficiency. In such a situation, even with the awareness that unethical activities can only briefly create the illusion of success on the road to efficiency and providing the company with a competitive advantage on the market, managers sometimes decide on this way of acting [Klimek 2014b].

The relationship between morality and business has always been a subject of consideration for both theoreticians and practitioners. The actions of business people who do not comply with the moral principles in force in a given society are often criticized. It should also be noted that business can be particularly susceptible to breaking moral rules, which means that it is watched by society. Economic decisions relate to various areas of life, and the actions taken influence the interests of many social groups, their living conditions, and life opportunities. The assessment of these behaviours and business activities depends on whether the assessments are based on the principle of equity, and the morality of conscience, or whether they are based on the rules of effectiveness, referring to the practice of economic life [Kopka 2013].

To sum up, the modern economy requires not only economic and technical knowledge, but also knowledge about the ethical dimension of economic activity. Therefore, education in the field of business ethics is becoming increasingly important [Gasparski 2012],

and ethics is starting to play an increasingly important role in business operations. At the same time, reliability in business brings many benefits, of which no less important is the fact that this is a key factor in allowing businesses and society to function properly. Successful corporate leaders and the companies they represent will feel satisfied that they do business honestly and treat customers, employees and others with dignity and respect. It is worth emphasizing that clients, employees and the whole society will be much more willing to support such a company and identify with it. Certainly, it is easier for companies to build long-term relationships with clients and employees if their activities are based on honest business practice [Byars and Stanberry 2018].

THE IMPORTANCE OF ETHICS IN THE MANAGER'S WORK BASED ON EMPIRICAL RESEARCH

In order to learn about the ethical aspect of the manager's work and verify the hypotheses set up, it became necessary to conduct empirical research. The study covered employees in selected enterprises, whose selection for the study was intentional. As the criterion for selection, the number of employees was established, and therefore the research covered 30 selected small and medium-sized companies, employing a maximum of 250 people. The study was conducted from September to November 2018 in the Wielkopolskie Voivodeship. The survey, which was the method used to verify the hypotheses, consisted of conducting interviews through the use of electronic mail, and eventually 275 completed questionnaires were accepted for the analysis.

Among the employees participating in the survey, men predominated, constituting 64% of the respondents. Respondents held the following positions: sales employees (sales representatives, employees performing orders in sales departments) – 31%, office employees – 25%, employees directly dealing with customer service – 44%. The people in the study group were aged 30–39 years – 51%, 20–29 years old – 32%, and over 40 years old – 17%.

The first question addressed to employees was: Does the company have a code of ethical principles?

According to the analysis of the answers, not all employees are able to answer this question, which may suggest the low significance of ethical aspects in the company or the lack of formal records regarding ethical activities. The distribution of answers is presented in Figure 1.
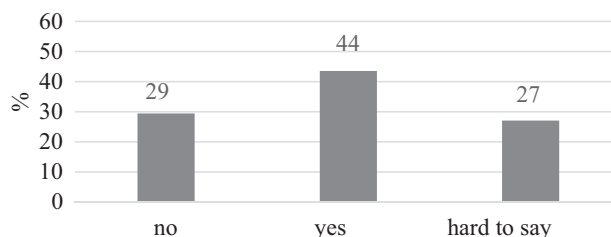
Fig. 1.   The code of ethical principles in the company

Source: Author's own study.

Analysing the above distribution of responses, it should be noted that 44% of respondents confirmed the existence of a code of ethics in the companies in which they are employed. At the same time, nearly 30% claimed that such a code was not in force in their companies. However, the most puzzling is the number of undecided people who could not clearly determine whether or not their company had a code of ethics – they constituted 27% of all respondents.

The second question was: Do managers apply ethical principles in management? The distribution of individual answers is presented in Figure 2.
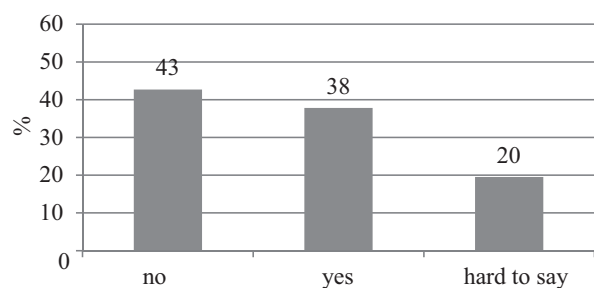
Fig. 2.   Application of ethical principles by managers

Source: Author's own study.

According to the data on the chart above, according to almost half of employees (43%), their managers do not apply ethical principles in their work. At the same time, 38% of respondents said that their manag-

ers are guided by ethics and its principles. It should also be noted that 20% of people were unable to assess this aspect of the manager's work.

Based on the above two charts illustrating the respondents' answers, it should be emphasized that in the opinion of half of the surveyed employees, managers do not follow ethical norms at work. Only 38% confirmed their implementation and the others could not identify whether or not their managers followed ethical principles. In addition, less than 1/3 of respondents confirmed the existence of ethical codes in their companies. Many do not confirm it or do not even know about it. Therefore, it was necessary to reject Hypothesis 1, which assumed that: In the surveyed enterprises, managers apply ethical principles resulting from ethical codes binding in the company.

In addition to the previous questions, respondents were also asked: Are employees required to apply ethical principles? Individual responses to this question can be found in Figure 3.

The responses are quite surprising. According to the Figure 3, over half of the respondents confirmed that managers require them to follow ethical principles in their daily work (answer: definitely yes was indicated by 16%, and rather yes by 44%). At the same time, over 20% of respondents do not feel such requirements (answer: rather not was indicated by 20%, and definitely not by 2%). And a full 18% of respondents were unable to determine whether or not they were required to apply ethical principles in their work.

For the purposes of inference, it is necessary to analyse the answer to the question: On what basis do you currently feel the ethical principles in your company? The distribution of respondents who made a choice between five different variants is shown in Figure 4.

The above question showed the diversity of elements affecting the company's ethical principles. As can be seen in Figure 4, ethical principles are most often based on manager's instructions (26% of respondents' answers) or based on management/owner guidelines (21%). Subsequently, 20% of respondents also stated that ethical rules result from ethical codes binding in the company. Unfortunately, as many as 18% of the surveyed employees considered that each individual implements rules consistent with his/her own value system, without the participation of other people employed
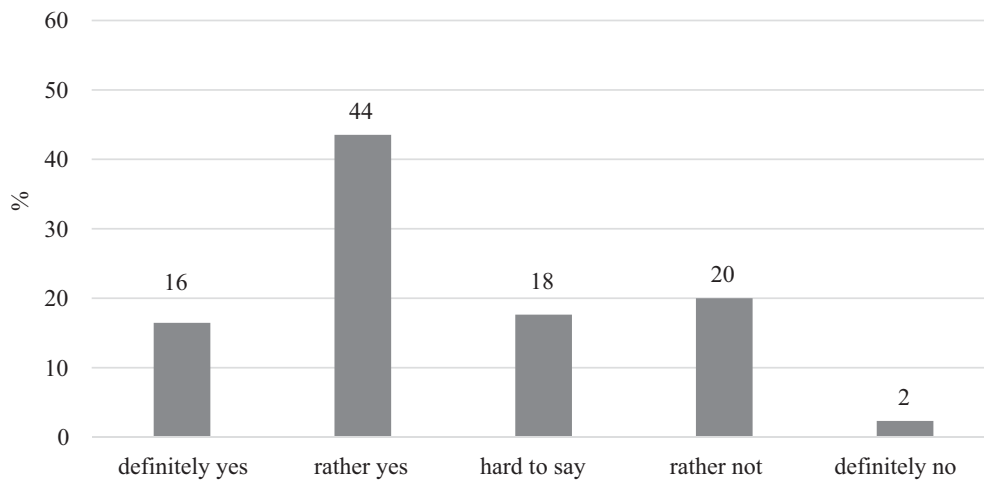
Fig. 3. Requirements towards employees regarding the application of ethical principles

Source: Author's own study.
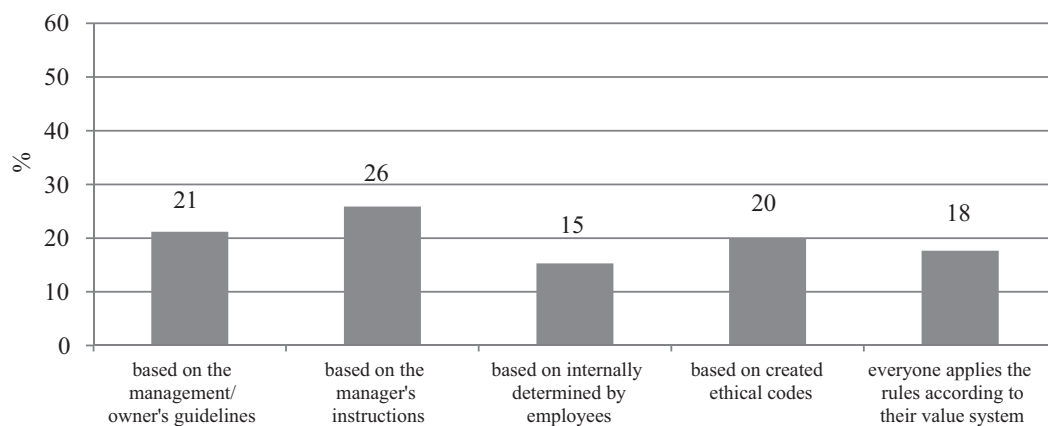
Fig. 4. Fundamentals of ethical principles in an enterprise

Source: Author's own study.

in the company. In addition, 15% of the respondents clearly indicated that employees operating in specific teams set the standards of conduct themselves.

Summing up, general conclusions can be formulated on the basis of the conducted research. In many companies, employees do not know if a code of ethics exists. This may be due to the fact that codes of ethics are not always communicated to employees. Often they are only a formal document that does not translate into real actions and behaviour of individual people in the company. In addition, according to almost half of the respondents, their managers do not apply ethical principles in their work, but at the same time require their employees to follow such principles in their daily work.

The important role of the manager in creating and implementing ethical rules in the company is confirmed by the surveyed employees who responded that ethical principles are created based on manager's instructions or based on the guidelines of the board/owner. Together, these people constituted half of all people participating in the study.

The conducted research confirmed that the ethical aspect is an inseparable element of the work of a good manager, because applying ethical rules can significantly affect the functioning of an enterprise in a market environment and at the same time determine its existence in the future.

CONCLUSIONS

Contemporary managers have different tools at their disposal, but even the best and most advanced tools will not affect the success of their actions as much as their ethical conduct. The important thing is that it is not enough to be a good manager, but managers also need to take such actions and create a reality that will be focused on implementing the values that allow them to create long-term competitiveness of the company. The application of ethical norms in managing people will translate in the future not only into their involvement in the performance of activities and loyalty in relation to the enterprise, but above all in shaping the image in the market environment and, consequently, the effectiveness of the actions taken.

The research helped bring some of the elements related to the implementation of ethical standards in the company and the role of the manager into this process. The biggest difficulties that arose during the implementation of the research were obtaining high maneuverability of the surveys from respondents in accordance with the researcher's assumptions. However, this enabled cooperation with selected enterprises of Wielkopolska region in the implementation of the training project in the period from September to November 2018, during which time employees participating in training were included in the study. There was a high risk that after the period of cooperation with companies the researcher would not be able to obtain results. It was difficult to operate under time pressure and in conditions of high uncertainty regarding the maneuverability of surveys.

Analysing the results obtained, it should be noted that in the future questions should be formulated in more detail so that the obtained answers can be used for more comprehensive inference. Certainly, interesting conclusions could be brought by a study carried out in the same companies among managers in the future, then comparing the results. It can be expected that the answers obtained would be significantly different. However, reaching the same people and inviting them to research would be a very big limitation.

To sum up, it is worth noting that the topic of ethical activities and corporate social responsibility is current and concerns not only entrepreneurs and managers, but also employees. Therefore, it is worth conducting research and analysing the results to make people aware of the need to implement ethical principles in enterprises focused on long-term success and the role of managerial staff in this respect.

REFERENCES

Bartkowiak, P., Niewiadomski, P. (2011). Menedżer a kierownik organizacji. Zeszyty Naukowe Uniwersytetu Szczecińskiego. Finanse, Rynki Finansowe, Ubezpieczenia, 48, 25–36.

Byars, S.M., Stanberry, K. (2018). Business Ethics. OpenStax. Rice University, Houston.

Chwistecka-Dudek, H. (2015). Etyka biznesu – nowa tendencja w zarządzaniu. In: M. Pawlak (Ed.) Nowe tendencje w zarządzaniu. Wydawnictwo KUL, Lublin.

Gasparski, W. (2019). Biznes, etyka, odpowiedzialność. Wydawnictwo Naukowe PWN, Warszawa.

Klimek, J. (2014). Etyka biznesu w warunkach silnej konkurencji. Studia Ekonomiczne, 180, Part 1, 94–105.

Klimek, J. (2014). Etyka biznesu. Teoretyczne założenia, praktyka zastosowań. Difin, Warszawa.

Kopka, J. (2013). O koniecznej tożsamości etyki biznesu i etyki ogólnej. In: Ł. Sułkowski, G. Ignatowski (Eds.) Etyka w służbie biznesu. Studia i Monografie, 44. Społeczna Akademia Nauk, Łódź.

Kubik, K. (2012). Profesjonalizm menedżera determinantą sukcesu organizacji. Zeszyty Naukowe Uniwersytetu Przyrodniczo-Technicznego w Siedlcach. Administracja i Zarządzanie, 93, 21–33.

Kwarcińska, A. (2015). Corporate Social Responsibility jako zobowiązanie moralne biznesu. Zeszyty Naukowe Uniwersytetu Szczecińskiego. Współczesne Problemy Ekonomiczne. Globalizacja. Liberalizacja. Etyka, 10, 157–165.

Leoński, W. (2016). Kodeks etyczny jako instrument społecznej odpowiedzialności biznesu. Zeszyty Naukowe Politechniki Częstochowskiej, Zarządzanie, 22, 257–263.

Mackie, J.E., Taylor, A.D., Finegold, D.L., Daar, A.S., Singer, P.A. (2006). Lessons on ethical decision making

from the bioscience industry. PLoS Medicine, 3 (54), e129, https://doi.org/10.1371/journal.pmed.0030129

Matuszewska, A. (2017). Istota i znaczenie etyki. Zeszyty Naukowe Państwowej Wyższej Szkoły Zawodowej w Płocku. Nauki Ekonomiczne, 26, 405–416.

Monahan, K. (2012). A Review of the Literature Concerning Ethical Leadership in Organizations. Emerging Leadership Journeys, 5 (1), 56–66.

Moss, M. (2002). Spreading the ethical word. Information Management Journal, 36 (4), 42.

Mroziewski, M. (2014). Etyka w zarządzaniu. Wybrane problemy w aspekcie inteligencji moralnej i konkurencyjności przedsiębiorstwa. Wydawnictwo Uniwersytetu Warmińsko- Mazurskiego w Olsztynie, Olsztyn.

Paliwoda-Matiolańska, A. (2014). Odpowiedzialność społeczna w procesie zarządzania przedsiębiorstwem. C.H. Beck, Warszawa.

Rabiański, R. (2013). Biznes odpowiedzialny społecznie. Odpowiedzialność czy wizerunek. In: Ł. Sułkowski, G. Ignatowski (Eds.) Etyka w służbie biznesu. Studia i Monografie, 44. Społeczna Akademia Nauk, Łódź.

Skrzek-Lubasińska, M., Dyjas-Pokorska, A., Kudrewicz- -Roszkowska, M., Makuch, Ł., Stanek-Kowalczyk, A., Uhl, H. (2011). Ocena stanu wdrażania standardów społecznej odpowiedzialności biznesu. Zestaw wskaźników społecznej odpowiedzialności w mikro, małych, średnich oraz dużych przedsiębiorstwach. Raport. Retrieved from https://www.parp.gov.pl/storage/publications/pdf/2011_ocena_csr.pdf [accessed: 13.12.2019].

Stoner, J.A.F., Freeman, R.E., Gilbert, D.R. Jr (2011). Kierowanie. PWE, Warszawa.

Szczupaczyński, J. (2010). Zarządzanie a etyka w opinii menedżerów średniego i wyższego szczebla. Współczesne Zarządzanie. Kwartalnik Środowisk Naukowych i Liderów Biznesu, 4, 63–74.

Szejniuk, A. (2016). Etyka menedżerska w zarządzaniu zasobami ludzkimi. Journal of Modern Science, 1, 89–104.

Thornton, L. (2009). Leadership ethics training: Why is it so hard to get it right? Training + Development. Retrieved from https://leadingincontext.com/2009/09/11/leadership-ethics-training [accessed: 13.12.2019].

ROLA MENEDŻERA WE WDRAŻANIU ZASAD ETYCZNYCH W WYBRANYCH PRZEDSIĘBIORSTWACH WOJEWÓDZTWA WIELKOPOLSKIEGO

STRESZCZENIE

W przedsiębiorstwach konieczne staje się wyznaczanie granic i norm postępowania, a także nadzorowanie ich wdrażania oraz konsekwentne ich realizowanie w pracy menedżera, który ma wpływ na działania podległych mu pracowników. Celem badawczym jest zidentyfikowanie poglądów pracowników na wdrażanie zasad etycznych w firmie, a także określenie w tym procesie roli menedżera. Postawiona została hipoteza: w badanych przedsiębiorstwach menedżerowie stosują zasady etyczne wynikające z obowiązujących w firmie, znanych wszystkim kodeksów etycznych. Wnioski z badania pierwotnego przeprowadzonego na grupie pracowników wymusiły odrzucenie hipotezy. Unaoczniły one też, że zasady etyczne powstają według instrukcji menedżera lub na podstawie wytycznych zarządu/właściciela, a sam aspekt etyczny jest ważnym elementem pracy dobrego menedżera. Stosowanie odpowiednich reguł może bowiem wpływać na funkcjonowanie przedsiębiorstwa.

Słowa kluczowe: zarządzanie ludźmi, etyka biznesu, zarządzanie etyczne

DETERMINANTS OF DEBT IN RURAL MUNICIPALITIES ON THE EXAMPLE OF THE WARMIŃSKO-MAZURSKIE VOIVODESHIP

Anna Wichowska✉

University of Warmia and Mazury in Olsztyn

ABSTRACT

One of the major consequences of the economic crisis with which the local governments had to deal was growing debt, the implications of which could endanger the continuity of public services. It appears that the largest cities in Poland were especially exposed to the negative effects of the indebtedness, yet the problem affected the village communes as well. Therefore, the main aim of the article was to assess the level of indebtedness of rural communes against other communes as well as to identify the determinants of the debt. As an example for the analysis communes of the Warmińsko-Mazurskie Voivodeship were selected, as the region is characterized by a high share of rural areas as well as a rather unfavourable economic situation. The general indebtedness of the selected rural communes remained at a relatively low level in comparison to the urban and urban-rural communes. Findings also suggest that the level of debt was influenced primarily by such factors as the number of inhabitants in the studied area, the number of primary schools, as well as the share of the post-working age population in the population total.

Key words: indebtedness, rural communes, financial crisis, depopulation

JEL codes: H74, G01, G18

INTRODUCTION

The long-term financial sustainability of local governments is influenced not only by the robustness of policies concerning local taxes and the scope, type and provision of public services, but also by local borrowing power [IPSASB 2011, Wichowska and Ostrowska 2018]. External financing can drive public investments in infrastructure and human resources, including education and health care. On many developed markets, programs to counteract unemployment are financed by local governments, thus contributing to local financial burden and public debt. According to Keynesian theory, such programs act as automatic stabilizers that alleviate the socio-economic consequences of market slowdown [Tešić et al. 2014]. However, growing levels of debt and budget deficit can contribute to local as well as macroeconomic and global problems. Increased budget deficit leads to spending cuts and drives down incomes due to the depletion of municipal funds and higher debt servicing costs, which increases the risk of irresponsible fiscal policy and intervention from higher level authorities. In the most extreme cases, a municipality can declare bankruptcy or can even be dissolved. The above scenario materialized in the municipality of Ostrowice in the Zachodniopomorskie

Anna Wichowska https://orcid.org/0000-0003-2862-4424

✉anna.wichowska@uwm.edu.pl

Voivodeship which was dissolved on 1 January 2019 due to excessive debt [Jastrzębska 2017, Ustawa z dnia 5 lipca 2018 r. …].

In the literature, two approaches to municipal deficit have been proposed in reference to different types of municipalities in the administrative structure. According to the first approach, rural municipalities are characterized by lower levels of public debt than urban municipalities [Poniatowicz 2014], whereas the second approach postulates that rural and urban municipalities are at equal risk of excessive public debt in periods of slow economic growth, but the causes of deficit are somewhat different [Kim and Warner 2018]. The latter approach is most frequently cited in foreign literature. In view of the above discrepancies, the aim of this study was to analyse the debt of rural municipalities in relation to other types of municipalities.

Despite the fact that rural areas continue to attract growing interest in the literature [Kozera 2017], the factors that affect local deficit have been rarely analysed. In studies that address this problem, municipal deficit is generally analysed from a specific point of view, such as financial sustainability, fiscal stress or a municipality's financial condition [Ossowska and Ziemińska 2010, Bolivar et al. 2014, Kim and Warner 2018]. Standard debt indicators recommended by the Ministry of Finance for analysing the state of local finances are usually used in such evaluations. This study attempts to fill in the existing knowledge gap by identifying the determinants of municipal debt.

The study covered all rural municipalities in the Warmińsko-Mazurskie Voivodeship (67 out of the total of 116 municipalities). Rural municipalities, i.e. areas situated outside the administrative boundaries of cities, occupy around 97.5% of the voivodeship's territory. In the past, more than 100 collective farms had operated in the rural municipalities of Warmińsko-Mazurskie Voivodeship. The consequences of collective farming and the privatization of State-owned farms are still being felt in the evaluated voivodeship [UM WM Olsztyn, ROPS, ROT-OPS 2015]. The study analysed data for 2010–2017, i.e. the period that followed the global financial crisis.

Warmińsko-Mazurskie Voivodeship is one of the least economically developed Polish voivodeships.

Therefore, an analysis of the determinants of municipal debt will not only expand the existing knowledge on the subject, but will also have practical implications by providing valuable inputs for improving local management and control and implementing rational financial policies.

THEORETICAL BACKGROUND

In the United States [Kim and Warner 2018] and Europe, including Great Britain, Ireland and Spain [Milan and Creutzig 2016, Turley et al. 2018], the consequences of the Great Recession that began in the late 2000s were also felt by local governments, in particular in rural municipalities. In recent years, the global economic slowdown also affected Polish municipalities. At the local level, the main consequences of the recession were decreased public spending and growing debt. The above problems were largely exacerbated by the existing budget deficits [Jastrzębska 2016] which resulted from a decrease in municipal incomes during the crisis, higher levels of public spending, higher number of investments co-financed by European funds, as well as speculations relating to changes in legal regulations concerning public debt limits and local government borrowing in the future [Parlińska 2014].

The accumulation of the above problems, in particular in less developed municipalities, can compromise territorial units' credit rating and financial sustainability. The above usually leads to an increase in debt servicing costs, and it undermines a municipality's ability to provide public services. Certain types of public services, in particular capital expenditure related to infrastructure, may be abandoned, and local governments are forced to find new sources of revenue. This situation is often referred to as fiscal stress [Kloha et al. 2005, Maher and Deller 2007]. According to research, the long-term consequences of lower capital spending include slower economic growth [Afonso 2014] and a decrease in the economic performance of municipalities [Arezki and Ismail 2013]. However, these consequences can also be felt at the regional level, and they can compromise the competitiveness of voivodeships because municipalities are burdened with most public tasks relating to, for example, infrastructure development.

As previously noted, local debt is usually exacerbated by higher demand for funds. Large municipalities generally have higher financial needs than less populated territorial units, most of which are rural municipalities [Warner and Pratt 2006, Poniatowicz 2014]. The above can be attributed to the fact that many cities finance public services that are also used by the inhabitants of the neighbouring municipalities. This effect is generally referred to as the free rider problem [Swianiewicz 2000, Swianiewicz and Łukomska 2017]. Labour costs and property prices are higher in large municipalities, which increases the cost and scope of public services that have to be provided by the local government, including spending on welfare, environmental protection, public transport and education [Swianiewicz 2001]. Therefore, growing financial needs generate higher debt in urban than in rural municipalities. Urban municipalities generally have a higher credit rating due to higher creditworthiness, higher levels of economic activity and lower operating costs (effects of economies of scale) [Wenner 2007]. The results of research studies investigating local government debt in large cities in Poland [Poniatowicz 2014, Kozera 2016] and Slovakia [Kling et al. 2002] have confirmed that municipal debt is generally higher in large urban agglomerations.

Some of the observations relating to local government debt in large municipalities also apply to rural municipalities which are undergoing dynamic changes in Poland. According to many researchers, rural areas are catching up with urban municipalities not only in terms of socio-economic growth, but also social aspirations, consumer trends and demographic trends [FDPA 2016]. Suburbanization induces changes in villages which are increasingly likely to take on residential and service functions [Kozera 2017]. Rural municipalities where agriculture continues to be the main source of income are experiencing negative social phenomena, including population ageing, higher percentage of elderly citizens in the local population, greater demand for public services and a reduced tax base [Wolf and Amirkhanyan 2010]. Poverty and unemployment also pose a considerable challenge for rural municipalities that are situated remotely from regional business hubs. These problems are exacerbated by the ongoing consequences of the economic recession, which increases local government expenditure,

decreases revenues, contributes to local deficit and the demand for external sources of funding, such as State aid and loans [Hollander 2011]. Both fund raising options are limited in rural municipalities. Firstly, rural municipalities do not have sufficient potential to compete effectively for State aid with urban municipalities [Shortall and Warner 2010], and secondly, they are bound by rigorous debt limits [Ustawa z dnia 27 sierpnia 2009 r. …].

In view of the above, two research questions can be posed: what is the level of local government debt in rural municipalities relative to the remaining municipalities? and what are the key determinants of local debt in rural areas? Based on the assumption that local government debt is an element of local financial stability and that it is shaped by similar factors [Bolivar 2014], two types of potential variables were selected for this study: demographic and economic factors. Other determinants that were proposed in a study investigating the level of fiscal burden on taxpayers in non-metropolitan areas in the USA, mostly rural areas [Johnson 1995], were also used. According to the cited authors, fiscal burden is influenced not only by demographic and economic factors, but also by intergovernment revenue transfers from the State for financing local services.

The above-mentioned factors can exert a direct or an indirect effect on local governments' tasks and local debt. Most of these determinants are internal (local) factors. However, local governments also maintain relations with regional and national stakeholders, and the relevant external factors include legal regulations, debt limits and, indirectly, a municipality's administrative status. Non-legal factors, such as local institutions (banks and other lenders), the natural environment, natural resources, levels of social and economic development, structure of the national economy and inflation rate also play an important role [Felis 2018]. Most of the relevant quantitative data are not available at the local level, and these parameters were not taken into account in the study.

MATERIAL AND METHODS

A financial analysis was performed to evaluate the levels of local government debt in the rural municipalities of the Warmińsko-Mazurskie Voivodeship.

Local debt was measured based on total debt as well as long-term and short-term debt per capita in rural municipalities, and the results were compared with urban municipalities and urban-rural municipalities. Data concerning local debt were obtained from the consolidated financial statements of Polish municipalities which are published annually by the Ministry of Finance [2019]. The remaining data were acquired from the online Local Data Bank of Statistics Poland[1]. The analysed period was 2010 to 2017. The results of the financial analysis were presented graphically as the median of total debt per capita in the evaluated types of municipalities [Stanisz 2007].

The determinants of local government debt in rural municipalities were identified by linear regression. The explained (dependent) variables included total debt as well as long-term and short-term debt per capita. The explanatory (independent) variables were identified based on a review of the literature. The following explanatory variables were adopted in this study: population (X_1), population density (X_2), proportion of post-working age population in total population (X_3), proportion of pre-working age population in total population (X_4), gross enrolment in primary schools (X_5), gross enrolment in middle schools (X_6), number of primary schools (X_7), number of middle schools (X_8), unemployment rate (X_9), municipal revenues per capita (X_{10}), number of businesses per 1,000 population (X_{11}) proportion of other sources of revenue in total municipal revenues (X_{12}).

Variables that were not normally distributed in the Shapiro–Wilk test were normalized by Box–Cox transformation [Box and Cox 1981, Sakia 1992]. The assumptions justifying the use of a linear regression model were verified with the following tests and methods: linearity in parameters – Ramsey RESET test; assumption of homoscedasticity– White test; multivariate normality – Doornik–Hansen test; measure of autocorrelation – Durbin–Watson test. The quality of the model was evaluated with the use of the F-test of overall significance, Student t-test and the coefficient of determination (R^2) [Stanisz 2007, Kufel 2011, Welfe 2014].

The model assumptions were tested at a significance level of $p = 0.05$. The regression analysis was carried out in the GRETL v. 2017d-git program. Normality tests and Box–Cox transformations were performed with the use of the Statistica v. 13 program.

RESULTS AND DISCUSSION

In 2010–2017, total debt per capita was lowest in the rural municipalities of the Warmińsko-Mazurskie Voivodeship relative to other types of municipalities. Total debt per capita was highest in cities and somewhat lower in urban-rural municipalities. However, rural municipalities were characterized by greater fluctuations in total debt per capita than other municipalities. Total debt per capita in the analysed municipalities in 2010–2017 is presented in Figure 1.

An analysis of long-term debt indicates that lower total debt per capita could be attributed to relatively low levels of long-term debt per capita in rural municipalities. In 2011, long-term debt per capita was significantly reduced in rural municipalities, and it was more than PLN 1,000 lower than in urban municipalities and more than PLN 750 lower than in urban-rural municipalities. From 2011 onwards, long-term debt per capita in rural municipalities remained relatively stable and did not exceed PLN 455. Long-term debt per capita in the municipalities of the Warmińsko-Mazurskie Voivodeship in the analysed period is presented in Figure 2.

An analysis of short-term debt per capita in rural municipalities produced completely different results (Fig. 3). Beginning from 2011, short-term debt per capita was considerably higher in rural municipalities than in other types of municipalities until the end of the analysed period. The greatest differences were observed in 2013 when short-term debt per capita in rural municipalities was more than PLN 417 higher than in urban municipalities and more than PLN 739 higher than in urban-rural municipalities.

The low level of total debt and long-term debt per capita in rural communes results from many reasons. It is probably related primarily to the general, weak eco-

---

[1] Bank Danych Lokalnych GUS webpage https://bdl.stat.gov.pl/BDL/start [accessed: 26.03.2019].
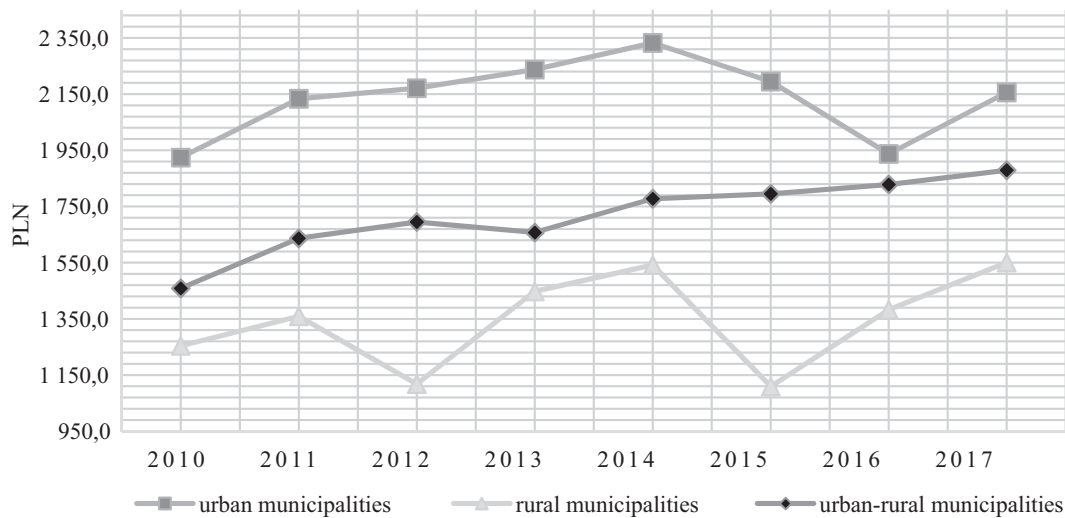
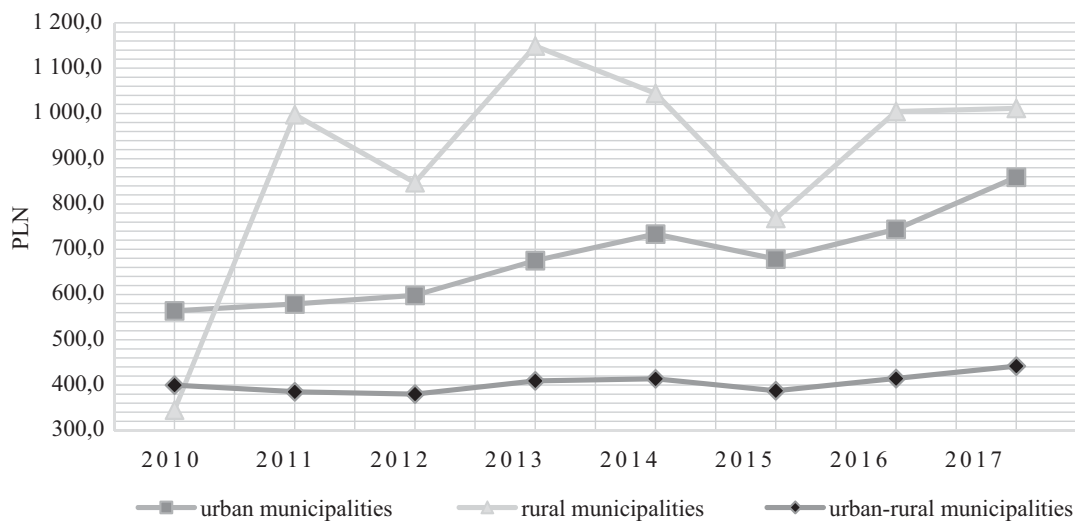**Fig. 1.**   Total debt per capita in different types of municipalities in the Warmińsko-Mazurskie Voivodeship in 2010–2017

Source: Author's own elaboration based on the Ministry of Finance data and the Local Data Bank of Statistics Poland.
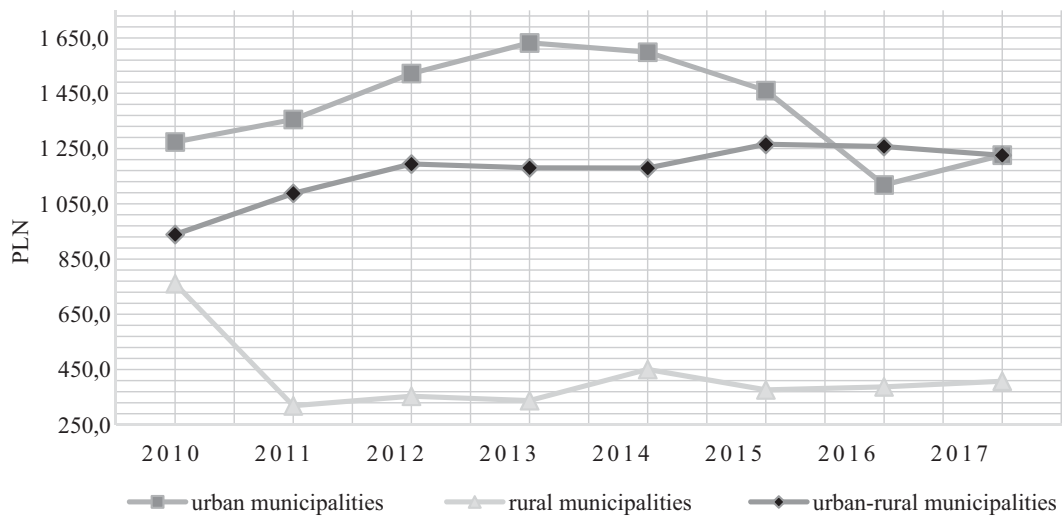
Fig. 2.   Long-term debt per capita in different types of municipalities in the Warmińsko-Mazurskie Voivodeship in 2010––2017

Source: Author's own elaboration based on Ministry of Finance data and the Local Data Bank of Statistics Poland.

nomic situation of the communes of the Warmińsko--Mazurskie Voivodeship, and thus – to the low level of investment, lower ability to obtain European funds, as well as legal restrictions in making further commitments. Attention is drawn to the fact that rural communes were characterised by a relatively high short--term debt compared to other communes, which may have its causes, e.g. in the short-term view on planning and investment in the commune or financing only temporary needs.

Fig. 3. Short-term debt per capita in different types of municipalities in the Warmińsko-Mazurskie Voivodeship in 2010–2017

Source: Author's own elaboration based on Ministry of Finance data and the Local Data Bank of Statistics Poland.

Local government debt in rural municipalities was analysed in view of internal factors, including demographic factors, economic factors and revenue transfers from the State budget. The results of linear regression analysis met the underlying assumptions, and they are presented in the table. The table (p. 127) presents only the variables that were significantly related to the dependent variable, as indicated by the Student t-test for the adopted parameters, whose significance level had to be less than $p < 0.05$. The analysis revealed that total debt per capita in the rural municipalities of the Warmińsko-Mazurskie Voivodeship was significantly correlated with one independent variable, namely the number of primary schools (X_7). The relationship was negative, which meant that the average increase in the independent variable could cause a decrease in the dependent variable. However, the level of explanation of the variability of total liabilities per capita by the number of primary schools in municipalities was not high. The coefficient of determination (R^2) was determined at 19.47%, which suggests that the percentage of variation in total debt per capita explained by the number of primary schools in municipalities was not high.

Long-term debt per capita was bound by a significant negative relationship with population (X_1). This meant that the average increase in population could have caused a fall in the dependent variable. The variation in long-term debt per capita was explained by population in 34.62%.

The proportion of the post-working age population in total population was significantly correlated with short-term debt per capita. The noted relationship was positive, which implies that an increase in the proportion of the elderly population in total population increased short-term debt per capita. The coefficient of determination (R^2) reached 98.65%, therefore, the above variable explained the observed variations in short-term debt per capita in nearly 100%. The high value of the coefficient of determination for this variable was the effect of the procedure normalizing the explanatory variables of Box–Cox.

The above results are a compilation of the previously discussed approaches to local government debt in rural municipalities in the literature. The presented findings confirm that rural municipalities are characterized by considerably lower total debt per capita than other types of municipalities. However, the results of the linear regression analysis and the identified determinants of local government debt indicate that demographic problems pose a particu-

Table. The results of the linear regression analysis for total, long-term and short-term debt per capita in the rural municipalities of the Warmińsko-Mazurskie Voivodeship in 2010–2017

Evaluation criteria	Total debt	Long-term debt	Short-term debt
Variables	X_7	X_1	X_3
Coefficient of regression	–2.37	–2.12	0.98
p-Value: Student t-test	7.90e-044	4.89e-014	2.05e-063
Combined significance of parameters	$F(1, 66) = 15.96$ with $p = P(F(1, 66) > 15.96) = = 0.000165$	$F(1, 66) = 35.95$ with $p = P(F(1, 66) > 35.96) = = 1.31e-07$	$F(1, 66) = 4\ 816.62$ with $p = P(F(1, 66) > 4\ 816.62) = = 2.05e-63$
Linearity test: Ramsey RESET test	$F(2, 64) = 0.58$ with $p = P(F(2, 64) > 0.58) = 0.56$	$F(2, 64) = 0.33$ with $p = P(F(2, 64) > 0.33) = 0.72$	$F(2, 64) = 3.21$ with $p = P(F(2, 64) > 3.21) = 0.05$
Normal distribution of the random component: Doornik–Hansen test	$\chi^2 = 2.26$ with $p = 0.32$	$\chi^2 = 1.79$ with $p = 0.40$	$\chi^2 = 1.35$ with $p = 0.51$
Homogeneity of residual variance: White test	$LM = 4.48$ with $p = P(\chi^2 > 4.48) = 0.11$	$LM = 0.79$ With $P = P(\chi^2 > 0.79) = 0.67$	$LM = 1.34$ with $p = P(\chi^2 > 1.34) = 0.51$
Autocorrelation: Durbin–Watson test	$DW = 2.18$ with $p = 0.76$ $dL = 1.57; dU = 1.63$	$DW = 2.22$ with $p = 0.81$ $dL = 1.57; dU = 1.63$	$DW = 2.18$ with $p = 0.75$ $dL = 1.57; dU = 1.63$
Coefficient of determination (R^2)	19.47%	34.62%	98.64%

Source: Author's own elaboration based on the results of the study.

lar challenge for rural municipalities in the investigated voivodeship. High short-term debt per capita was linked with a growing proportion of the post-working age population in total population, whereas high long-term debt per capita was correlated with a population decline. A relationship between fiscal stress and population decline was also reported in a study of Italian municipalities where fiscal burden increased with a decrease in population [Brusca et al. 2015].

The results of this study contradict the findings of the 2016 report of the Foundation for Development of Polish Agriculture (Fundacja na rzecz Rozwoju Polskiego Rolnictwa) entitled *Polska Wieś 2016*, which postulated that the levels of social and economic development are gradually converging in cities and rural areas. The above observation was not substantiated by the presented analysis based on the identified determinants of municipal debt.

CONCLUSIONS

The results of the presented study indicate that local government debt in the rural municipalities in the Warmińsko-Mazurskie Voivodeship did not increase significantly after the global recession. An increase was observed only in short-term debt per capita which fluctuated considerably in the analysed period. In the evaluated rural municipalities, total debt per capita was generally lower than in urban and urban-rural municipalities. The observed differences in debt levels could suggest that rural municipalities implement fewer infrastructure development programs and are less committed to raising additional funds for public

projects than larger municipalities. Very low levels of long-term debt per capita and high levels of short--term debt per capita in rural municipalities confirm the above observation.

The determinants of local government debt in rural municipalities were identified in the study. These findings not only expand our knowledge of local budgets, but they also have important practical implications. Municipalities are the lowest tier of government; therefore, they are directly confronted with local communities' needs and are most burdened with the high cost of public services. Social problems pose a considerable challenge for rural municipalities, and they should be resolved as part of long-term strategies. These problems are exacerbated by population ageing, which reduces tax revenues and increases spending on health care. Local governments can counteract these problems by implementing infrastructure development programs to stimulate business growth, including in the agritourism sector, and make rural municipalities more attractive to tourists and investors.

Further research is needed to evaluate the structure of debt in the rural municipalities of the Warmińsko--Mazurskie Voivodeship relative to other Polish regions, and to analyse the impact of demographic changes on local debt and the overall financial condition of rural municipalities. The developed models can be used to predict local fiscal stress in the coming years.

REFERENCES

Afonso, W.B. (2014). Local Government Capital Spending During and After Recessions: A Cause for Concern? International Journal of Public Administration, 37, 494––505.

Arezki, R., Ismail, K. (2013). Boom–bust cycle, asymmetrical fiscal response and the Dutch disease. Journal of Development Economics, 101, 256–267.

Bolívar, M.P.R., Galera, A.N., Muñoz, L.A., Subirés, M.D.L. (2014): Factors influencing local government financial sustainability: An empirical study. Lex Localis, 12 (1), 31, 31–54.

Box, G.E., Cox, D.R. (1981). An Analysis of Transformations Revisited, Rebuted MRC-TSR-2288. Mathematics Research Center, University of Wisconsin, Madison.

Brusca, I., Rossi, F.M., Aversano, N. (2015). Drivers for the Financial Condition of Local Government: A Comparative Study Between Italy and Spain. Lex Localis, 2, 131–184.

Felis, P. (2018). Polityka podatkowa władz gminnych w Polsce – wyzwania dla teorii i praktyki samorządowej. Retrieved from https://cor.sgh.waw.pl/handle/20.500.12182/659 [accessed: 22.03.2019].

Fundacja na rzecz Rozwoju Polskiego Rolnictwa – FDPA (2016). Polska Wieś 2016. Wydawnictwo Naukowe Scholar, Warszawa.

Hollander, J.B. (2011). Can a City Successfully Shrink? Evidence from Survey Data on Neighborhood Quality. Urban Affairs Review, 47, 129–141.

International Public Sector Accounting Standards Board (2011). Reporting on the Long-Term Sustainability of an Entity's Finances. Proposed Recommended Practice Guideline. Exposure Draft 46. International Federation of Accountants, New York.

Jastrzębska, M. (2016). Zadłużanie się jednostek samorządu terytorialnego w parabankach – przyczyny, skutki, przeciwdziałanie. Ekonomiczne Problemu Usług, 125, 187–200.

Jastrzębska, M. (2017). Dług ukryty jednostek samorządu terytorialnego – przyczyny, skutki, przeciwdziałanie. Annales Universitatis Mariae Curie-Skłodowska, Sectio H – Oeconomia, 51 (4), 125–132.

Johnson, K.M., Pelissero, J.P., Holian, D.B., Maly, M.T. (1995). Local Government Fiscal Burden in Nonmetropolitan America. Rural Sociology, 60, 381–398.

Kim, Y., Warner, M.E. (2018). Geographies of Local Government Stress after the Great Recession. Social Policy and Administration, 52 (1), 365–386.

Kling, J., Niznasky, V., Pilat, J. (2002). Separate Existances Above All Else – Local Self-Governments and Service Delivery in Slovakia. In: P. Swianiewcz (Ed.) Consolidation or Fragmentation? Local Government and Public Service Reform Initiative Open Society Institute, Budapest, 128–129.

Kloha, P., Weissert, C.S., Kleine, R. (2005). Developing and testing a composite model to predict local fiscal distress. Public Administration Review, 65 (3), 313–323.

Kozera, A. (2016). Zadłużenie metropolii w Polsce w latach 2007–2013. Studia Regionalne i Lokalne, 3, 70–93.

Kozera, A. (2017). Problem zadłużenia gmin wiejskich na przykładzie województwa wielkopolskiego. Wieś i Rolnictwo, 174, 75–97.

Kufel, T. (2011). Ekonometria. Rozwiązywanie problemów w wykorzystaniem programu GRETL. Wydanie trzecie, zmienione. PWN, Warszawa.

Maher, C.S., Deller, S.C. (2007). Municipal responses to fiscal stress. Intl Journal of Public Administration, 30 (12–14), 1549–1572.

Milan, B.F., Creutzig, F. (2016). Municipal policies accelerated urban sprawl and public debts in Spain. Land Use Policy, 54, 103–115.

Ministerstwo Finansów (2019). Sprawozdania finansowe. Retrieved from: https://www.gov.pl/web/finanse/sprawozdania-finansowe [accessed: 26.03.2019].

Ossowska, L., Zieminska, A. (2010). Kondycja finansowa gmin wiejskich i miejsko-wiejskich województwa pomorskiego. Journal of Agribusiness and Rural Development, 18, 73–85.

Parlińska, A. (2014). Zadłużenie samorządów gminnych w Polsce w latach 2005–2012. Nierówności Społeczne a Wzrost Gospodarczy, 40, 191–200.

Poniatowicz, M. (2014). Wpływ kryzysu gospodarczego na systemy finansowe jednostek samorządu terytorialnego na przykładzie największych miast w Polsce. CeDeWu, Warszawa.

Sakia, R.M. (1992). The Box-Cox transformation technique: a review. Journal of the Royal Statistical Society. D – The Statistician, 41 (2), 169–178.

Shortall, S., Warner, M.E. (2010). Social Inclusion or Market Competitiveness? A Comparison of Rural Development Policies in the European Union and the United States. Social Policy and Administration, 44 (5), 575–597.

Stanisz, A. (2007). Przystępny kurs statystyki z zastosowaniem STATISTICA PL na przykładach z medycyny. Vols. 1, 2. StatsSoft, Kraków.

Swianiewicz, P. (2000). W poszukiwaniu optymalnej wielkości. Opinie burmistrzów z Europy Środkowej na temat łącznia lub dzielenia rządzonych przez nich gmin. Studia Regionalne i Lokalne, 2 (2), 119–132.

Swianiewicz, P. (2001). Czy wielkie gminy są bogate? Studia Regionalne i Lokalne, 4 (7), 25–40.

Swianiewicz, P., Łukomska, J. (2017). Wpływ podziałów gmin i powiatów w Polsce na koszty ich funkcjonowania. Studia Regionalne i Lokalne, 1 (67), 26–47.

Tešić, A., Ilić, D., Đelić, A.T. (2014). Consequences of fiscal deficit and public debt in financing the public sector. Economic od Agriculture, 1, 177–193.

Turley, G., McNena, S., Robbins, G. (2018). Austerity and Irish local government expenditure since the Great Recession. Administration, 66 (4), 1–24.

Urząd Marszałkowski Województwa Warmińsko-Mazurskiego w Olsztynie, Regionalny Ośrodek Polityki Społecznej, Regionalne Obserwatorium Terytorialne – Obserwatorium Polityki Społecznej (2015). Diagnoza wybranych aspektów warunków życia środowisk popegeerowskich w województwie warmińsko-mazurskim. Olsztyn. Retrieved from: https://warmia.mazury.pl/images/Departamenty/Regionalny_Osrodek_Polityki_Spolecznej/badania_analizy/badania_ROT-OPS/raport_G%C5%81%C3%93WNY_2015.10.15v3ost.pdf [accessed: 26.03.2019].

Ustawa z dnia 27 sierpnia 2009 r. o finansach publicznych. Dz.U. 2009 nr 157, poz. 1240.

Ustawa z dnia 5 lipca 2018 r. o szczególnych rozwiązaniach dotyczących gminy Ostrowice w województwie zachodniopomorskim. Dz.U. 2018, poz. 1432.

Warner, M.E., Pratt, J.E. (2005). Spatial diversity in local government revenue effort under decentralization: a neural-network approach, Environment and Planning C: Government and Policy, 23, 657–677.

Welfe, A. (2014). Ekonometria. Metody i zastosowanie. PWE, Warszawa.

Wenner, M.D., Navajas, S., Trivelli, C., Tarazona, A. (2007). Managing credit risk in rural financial institutions in Latin America. American Development Bank, Washington DC.

Wichowska, A., Ostrowska, A. (2018). Stabilność finansowa gmin na przykładzie gmin województwa warmińsko-mazurskiego. Studia Prawno-Ekonomiczne, 109, 339–354.

Wolf, D.A., Amirkhanyan, A.A. (2010). Demographic change and its public sector consequences. Public Administration Review, 70, 12–23.

DETERMINANTY ZADŁUŻENIA W GMINACH WIEJSKICH NA PRZYKŁADZIE WOJEWÓDZTWA WARMIŃSKO-MAZURSKIEGO

STRESZCZENIE

Jedną z głównych konsekwencji kryzysu gospodarczego, z którym zmagały się samorządy gminne, był rosnący dług, którego konsekwencje mogły zagrozić ciągłości usług publicznych. Wydaje się, że największe miasta w Polsce były szczególnie narażone na negatywne skutki zadłużenia, ale problem ten dotknął także gmin wiejskich. W związku z tym głównym celem artykułu jest ocena poziomu zadłużenia gmin wiejskich na tle innych gmin oraz określenie czynników determinujących ich dług. Jako przykład do analizy wybrano gminy województwa warmińsko-mazurskiego, ponieważ region ten charakteryzuje się dużym udziałem obszarów wiejskich oraz dość niekorzystną sytuacją gospodarczą. Ogólne zadłużenie wybranych gmin wiejskich pozostawało na stosunkowo niskim poziomie w porównaniu do gmin miejskich i miejsko--wiejskich. Wyniki badań wskazują także, że na poziom zadłużenia wpływ miały przede wszystkim takie czynniki jak liczba mieszkańców badanego obszaru, liczba szkół podstawowych, a także udział populacji w wieku poprodukcyjnym w ogólnej liczbie ludności.

Słowa kluczowe: zadłużenie, gminy wiejskie, kryzys finansowy, depopulacja

CONTENTS
SPIS TREŚCI

INSTRUCTIONS TO AUTHORS

The journal *Acta Scientiarum Polonorum Oeconomia* features original scientific articles related to all aspects of economy, for example: food economy, European consumer goods market, sustainable regional development, development of culture environment, post crises political and social processes, human and social capital, labour market – gender perspective, public finances, rural development and entrepreneurship, social and innovative entrepreneurship, tourist economy.

General and technical requirements for the elaboration of papers:

1. **Size of the research paper** including tables, figures and photographs should not exceed 12 pages of A-4 format.
2. **Materials to be published** in *Acta Sci. Pol.* should be prepared in accordance with the rules of the publishing process binding at the publishing office of a given series of the Journal.
3. **Style of documents** – the text of the paper should be typed with TNR font 12 points, 1 1/2 of space between the lines, setting parts of the text in special typeface is allowed, e.g. italic or bold, but without underlining letters, words and sentences.
4. **Size of tables and figures** cannot exceed A-4 format (16.5 × 21.2 cm); descriptions of tables should be typed with TNR font 9 points, content of tables 8 points, single space, if possible without vertical lines, table format – doc. or rtf.

The following paper setting is binding:

1. **Title of the article** in Polish (or in English if the whole paper is in English; the same refers to the summary and key words).
2. **First name and surname** of the author (-s).
3. **Afiliation**.
4. **Paper abstract** (600–1000 characters).
5. **Key words** – up to 6 words useful when indexing and searching, from general to detail.
6. **The main text** of the research paper should include: introduction with the aim and research hypothesis, material and methods, results, discussion, conclusions (or summary) and references.
7. **Title, abstract** (600–1000 characters) as a translation of the summary and **key words** in English.
8. **Address** of the author's (authors') place of work – post and e-mail address.

Titles of tables and their content, and captions of figures and legends must be provided in English, while the numbers of tables and figures – with Arabic numerals.

Units and spelling – the international SI system is binding, e.g. $g \cdot dm^{-3}$ (and not g/dm^3).

References – when referring to the publications of other authors in the text of the paper, a surname and a year should be provided in brackets [Kowalski and Lewandowski 2000, Lewandowski 2001, Zalewski et al. 2001] or …according to Kowalski [2000]...

The list of references should be presented in the alphabetical order in the following way: author's (authors') surname, initials of first names; year of publishing if there is more than one paper of the same author published in a given year, after the year it is necessary to mark particular items a, b, c etc.; title of the paper, bibliographical abbreviation of the publishing house and place of publishing, numbers of volume, issue of periodic, book series, and pages, e.g.:

Chełkowski, Z. (1966). Introdukcja troci do rzeki Gowienicy. (Introduction of brown trout into the Gowienica river). Gosp. Ryb., 1(2), 18–19.

Greń, J., Kowalski, Z. (1972). Statystyka matematyczna. (Matematical statistics). PWN, Warszawa.

Pisulewski, P., Strzetelski, J., Antoniewicz, A. (2009). Podstawowe założenia IZ PIB-INRA norm żywienia przeżuwaczy (Basic objectives of nutritional standards for ruminants of the IZ PIB-INRA). [In:] J. Strzetelski (Ed.), IZ PIB-INRA. Normy żywienia przeżuwaczy. Wartość pokarmowa francuskich i krajowych pasz dla przeżuwaczy. Wyd. IZ PIB, Kraków, 11–20.

Patkowska, E., Konopiński, M. (2008a). Pathogenicity of selected soil-borne microorganisms for scorzonera seedlings (*Scorzonera hispanica* L.). Folia Horticul., 20(1), 31–42.

Patkowska, E., Konopiński, M. (2008b). Pathogenicity of selected soil-borne fungi for seedlings of root chicory (*Cichorium intybus* L. var. *sativum* Bisch.). Veg. Crops Res. Bull., 69, 81–92.

Turski, W. (1972). Projektowanie oprogramowania systemów liczących. (Software design of computing systems). Mat. konf. Projektowanie maszyn i systemów cyfrowych. Warszawa 2–5 czerwca 1971. PWN, Warszawa, 132–139.

The author sends the text of the paper in 2 copies to the editorial office. After he/she receives a review, the author sends an editorial copy to the editorial office including the reviewer's comments, a corrected copy of the paper including an electronic carrier (diskette, CD or e-mail) and a response to the reviewer's and editor's comments. The main part of the publication (abstract, the text of the article proper and references) should be saved in one file. The editorial office reserves a right to make cuts and corrections, and to suggest changes and substantive supplementations agreed with the author. The graphic material (figures, diagrams, charts) should be prepared and sent as a separate electronic file (source files) made in programs working in Windows environment (e.g. in Excel, Corel Draw, Photoshop etc.).

The author of the paper published is obliged to transfer his/her copyright to the publisher and submit a declaration that the paper has not been published in another journal.

The authors of the papers participate in the costs of their publishing. Information about fees and additional information for authors are available at the websites

www.acta_oeconomia.sggw.pl

www.oeconomia.actapol.net

WSKAZÓWKI DLA AUTORÓW

Na łamach *Acta Scientiarum Polonorum* zamieszczane są oryginalne prace naukowe. Wszystkie prace są recenzowane przez specjalistów spoza jednostki macierzystej autorów z zachowaniem zasady wzajemnej anonimowości, tzw. double-blind review process. Prace proponowane do druku w poszczególnych seriach należy przesyłać na adres odpowiednich wydawnictw uczelnianych lub na adresy ze stron internetowych poszczególnych serii.

Wymogi ogólne i techniczne przygotowania prac:

1. **Objętość pracy** wraz z tabelami, rysunkami i fotografiami nie powinna przekraczać 12 stron formatu A-4.
2. **Materiały do publikacji** w *Acta Sci. Pol.* powinny być przygotowane zgodnie z zasadami procesu wydawniczego obowiązującego w redakcji danej serii.
3. **Styl dokumentów** – tekst pracy należy pisać czcionką typu TNR 12 pkt, 1 1/2 odstępu między wierszami, dopuszcza się stosowanie wyróżnień w tekście, np. kursywę i pogrubienie tekstu, ale bez podkreślania liter, wyrazów i zdań.
4. **Wielkość tabel i rysunków** nie może przekraczać formatu A-4 (16,5 × 21,2 cm) ; rozszerzenie tabel – doc. lub rtf.

Obowiązuje następujący układ pracy:

1. **Tytuł artykułu** w języku polskim (lub angielskim, jeżeli cała praca jest w języku angielskim; to samo dotyczy streszczenia i słów kluczowych).
2. **Imię i nazwisko** autora (-ów).
3. **Afiliacja** wszystkich autorów.
4. **Streszczenie strukturalne** pracy (600–1000 znaków).
5. **Słowa kluczowe** – do 6 słów pomocnych przy indeksacji i wyszukiwaniu, układ (od ogólnych do szczegółowych).
6. **Tekst główny** pracy naukowej powinien obejmować: wstęp z celami i hipotezami badawczymi, materiał i metody, wyniki, dyskusję, wnioski (lub podsumowanie) i piśmiennictwo.
7. **Tytuł, abstract** (600–1000 znaków) jako tłumaczenie streszczenia i słowa kluczowe w języku angielskim (lub polskim, jeśli cała praca jest w języku angielskim).
8. **Adres do korespondencji** – pocztowy i internetowy.

Tytuły tabel oraz ich treść, a także podpisy rysunków i legendy muszą być podane w języku polskim i angielskim, a numery tabel i rysunków – cyframi arabskimi.

Jednostki i pisownia – obowiązuje międzynarodowy układ SI, a jednostki powinny być zapisane np: g·dm^{-3} (a nie g/dm^3).

Piśmiennictwo – przy powoływaniu się w tekście pracy na publikacje innych autorów podajemy w nawiasie nazwisko i rok, w układzie chronologicznym [Kowalski i Lewandowski 2000, Lewandowski 2001, Zalewski i in. 2001] lub ...zdaniem Kowalskiego [2000].

Wykaz piśmiennictwa należy zestawić w porządku alfabetycznym. Gdy w danym roku jest wydanych więcej prac tego samego autora, po roku należy oznaczyć poszczególne pozycje a, b, c itd., np.:

Chełkowski, Z. (1966). Introdukcja troci do rzeki Gowienicy. Gosp. Ryb., 1(2), 18–19.

Greń, J., Kowalski, Z. (1972). Statystyka matematyczna. PWN, Warszawa.

Pisulewski, P., Strzetelski, J., Antoniewicz, A. (2009). Podstawowe założenia IZ PIB-INRA norm żywienia przeżuwaczy. [W:] J. Strzetelski (red.), IZ PIB-INRA. Normy żywienia przeżuwaczy. Wartość pokarmowa francuskich i krajowych pasz dla przeżuwaczy. Wyd. IZ PIB, Kraków, 11–20.

Patkowska, E., Konopiński, M. (2008a). Pathogenicity of selected soil-borne microorganisms for scorzonera seedlings (*Scorzonera hispanica* L.). Folia Horticul., 20(1), 31–42.

Patkowska, E., Konopiński, M. (2008b). Pathogenicity of selected soil-borne fungi for seedlings of root chicory (*Cichorium intybus* L. var. *sativum* Bisch.). Veg. Crops Res. Bull., 69, 81–92.

Turski, W. (1972). Projektowanie oprogramowania systemów liczących. Mat. konf. Projektowanie maszyn i systemów cyfrowych. Warszawa 2–5 czerwca 1971. PWN, Warszawa, 132–139.

Autor przesyła do redakcji tekst pracy w 2 egzemplarzach. Po otrzymaniu recenzji Autor przesyła do redakcji egzemplarz redakcyjny z uwagami recenzenta, poprawiony egzemplarz pracy wraz z nośnikiem elektronicznym (dyskietka, CD lub e-mail) i ustosunkowaniem się do uwag recenzenta i redaktora. Część główną publikacji (streszczenie, właściwy tekst artykułu oraz piśmiennictwo) należy zapisać w jednym pliku. Tabele, rysunki i inne załączniki winny być włączone do tego pliku i dodatkowo znaleźć się w oddzielnych plikach. Redakcja zastrzega sobie prawo dokonywania skrótów i poprawek, a także proponowania zmian i uzupełnień merytorycznych uzgodnionych z autorem. Materiał graficzny (rysunki, schematy, wykresy) powinien być opracowany i przysłany jako osobny zapis elektroniczny (pliki źródłowe) w programach pracujących w środowisku Windows (np. w programach Excel, Corel Draw, Photoshop itp.).

Autor publikowanej pracy zobowiązany jest przenieść swe prawa autorskie na wydawcę i złożyć oświadczenie, że praca nie była publikowana w innym czasopiśmie **Autorzy prac partycypują w kosztach ich wydania**. Informacja o opłatach i dodatkowe informacje dla autorów znajdują się na stronach internetowych

www.acta_oeconomia.sggw.pl

www.oeconomia.actapol.net