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Competitiveness of farms in new European Union member states

Konkurencyjność gospodarstw rolnych nowych krajów członkowskich Unii Europejskiej

Summary. The aim of the study was to assess the competitiveness of farms in new EU member states against the background of the so-called '*old Union*' countries in the years 2014–2016. The research was carried out using the EU FADN database. As a measure of competitiveness, partial productivity indicators of production factors (land, labor, capital) were adopted. The research has shown the unfavorable competitive position of agricultural holdings in new member states in terms of land and labour productivity. Capital productivity less differentiated the countries studied, and the distance separating them from the EU-15 countries was not as large as in the case of the other two factors of production. The results obtained should be explained, among others, by relatively lower production potential of farms and low investment expenditures. The average value of these outlays per 1 ha of agricultural land in 13 EU countries in the analyzed years was 44% lower than in the EU-15 countries.

Key words: competitiveness, European Union, farms, productivity

INTRODUCTION

Competitiveness is a feature that can be attributed to various levels of analysis in economics [Gorynia and Jankowska 2008]. This also results in the fact that there is no unanimity regarding the definition of this phenomenon, as well as methods for its examination and evaluation. The spectrum of definitions of this concept also results from the fact that it derives from at least three trends in economic theory: international trade theory, economic growth theory and microeconomics [Strojny 2010]. In microeconomic terms, competitiveness means the ability of an enterprise to obtain specific results in comparison with other economic entities. Competitiveness of farms can be defined as "an

attribute resulting from the internal characteristics of these entities and from the ability to adapt to changes taking place in the environment, allowing it to achieve objectives more effectively in relation to other agricultural producers" [Nowak 2006]. Therefore, their competitiveness is determined not only by the resources they have, but also management skills, regarding the use of these resources.

Complexity of competitiveness and its dependence on many conditions, both exogenous and endogenous, mean that many different criteria are applied to its evaluation. According to Zawalińska [2004], there is no perfect measure of competitiveness. Poczta and Siemiński [2010] emphasize, however, that productivity is of central importance in assessing competitiveness in the aspect of microeconomics. The relevance of productivity to assess the level of competitiveness of agriculture is also indicated by Latruffe [2010], who defines it as the ability of production factors to produce a production. In addition, the European Commission considers productivity as the most reliable indicator of competitiveness in the long term [European Commission 2009].

When assessing the competitiveness of agricultural holdings in EU member states, it is necessary to pay attention to the specific conditions of its development. Results of many authors' research indicate a significant differentiation in the level of development of individual member states, including the level of agricultural development [Serrão 2003]. These differences relate to the economic importance of agriculture, natural conditions, the number and structure of farms, as well as production potential possessed [Nowak 2016].

The aim of the study is to assess the competitiveness of farms in new EU member states against the background of the so-called '*old Union*' from the point of view of the productivity of production factors achieved by them.

MATERIAL AND METHODS

The research was conducted on the basis of data from the database of the EU farm accountancy system FADN (Farm Accountancy Data Network). The research covered 28 EU member states with the division into old (EU-15) and new (EU-13) countries. In order to eliminate the impact of weather conditions on the production and economic results of farms, the analysis was carried out for 3 years, i.e. 2014–2016.

As a measure of competitiveness, partial factors of productivity of production factors for the analyzed years were adopted. Land, labor and capital productivity indicators were calculated as the ratio of the value of a farm's production to the area of agricultural land, to the number of full-time employees on the farm and to the value of total costs, respectively. In assessing the competitiveness of farms in the new member states, the average value of analyzed indicators for the group of 15 countries, the so-called '*old Union*', was adopted as a reference.

RESULTS AND DISCUSSION

Table 1 presents selected features characterizing farms in the examined EU member states. The new member states were diversified in terms of the average economic size of agricultural holdings. It is a measure characterizing its potential production capabilities, as well as a factor determining the possibilities of its development, including through the

amount of capital expenditures incurred [Müller-Frączek and Muszyńska 2014]. In the years 2014–2016, it ranged from 9.5 thousand euro in Romania to 466.2 thousand euro in Slovakia. In 11 countries that joined the EU since 2004, the average economic size of the agricultural holding was lower than the average in the old member states, and also lower than the average in the 28 EU countries.

Agricultural holdings in analyzed countries also differed in terms of the average area of arable land. The smallest area of farms occurred in Malta (2.8 ha), Slovenia (9.8 ha) and Romania (9.2 ha), while the largest in Slovakia (528.7 ha), Czech Republic (203.4 ha) and Estonia (127.7 ha). Land resources have significant impact on the production and economic results of agricultural holdings. Nowak's research [2017] showed that the average area of a farm also has positive impact on the increase in total agricultural productivity. This is due to the fact that along with the increase in the area of the farm, the scale of production usually increases, which translates into more rational use of available resources. Rahman and Salim [2013] argue that for developing countries, the size of a farm is still the dominant determinant of productivity growth.

Table 1. Selected characteristics of farms in new EU member states against the background of old members of the European Union in 2014–2016

Specification	Economic size (thousand euro)	Area of agricultural land (ha)	Net value added per 1 AWU (euro·AWU^{-1})	Gross investment per 1 ha (euro·ha^{-1})
Bulgaria	32.8	40.3	8809.7	186.0
Cyprus	38.8	11.3	9201.5	220.7
Czech Republic	249.3	203.4	21393.6	244.0
Estonia	90.3	127.7	13341.7	176.9
Croatia	23.1	16.4	6174.1	489.2
Hungary	55.0	49.0	20221.2	173.9
Lithuania	28.2	47.3	7748.8	269.1
Latvia	39.2	64.2	9512.7	250.3
Malta	37.6	2.8	10128.0	1257.9
Poland	28.1	18.5	6157.1	180.5
Romania	9.5	9.2	5273.8	58.9
Slovakia	466.2	528.7	17840.3	196.0
Slovenia	20.4	9.8	3926.1	851.3
UE-13	86.0	86.8	10748.4	350.4
UE-15	165.0	63.4	32411.7	505.3
UE-28	128.3	74.2	22353.7	432.2

Source: Own study based on the database FADN UE, http://ec.europa.eu/agriculture/rica/database/ [date of access: 15.09.2018]

Net added value expresses the payment for the involvement of production factors to the operational activity of the farm, regardless of their ownership status [Floriańczyk et al. 2016]. Calculated per 1 full-time employee (AWU), the value of this economic category ranged from 3926.1 euro in Slovenia to over 20 thousand in the Czech Republic

and Hungary. The average value of the analyzed indicator for 13 countries newly admitted to the EU was almost three times lower than in the so-called '*old 15*'.

In the subject literature, it is emphasized that investment expenditures are an indispensable condition for the development of the agricultural sector through the increase of economic efficiency and competitiveness [Kata 2010]. It is worth noting, however, that the benefits of investing are shifted in time [Brandes and Odening 1992]. The average value of investments per 1 ha of agricultural land in 13 EU countries in the years 2014–2016 was 350.4 euro, while in the EU-15, it was 44% higher (505.3 euro·ha^{-1}).

Productivity indicators enable the assessment of the use of production factors resources. Productivity in agriculture can be calculated as partial productivity for one factor or as total productivity [de Avillez 2011]. Partial productivity expresses the effectiveness of using each production factor separately, i.e. land, labor, capital [Boghean and State 2013]. It is believed that productivity, especially labor, is an important factor in building a competitive advantage in agriculture, which determines the position of the entire agricultural sector of a given country within regional and global competition [Kulawik 2009].

Among the factors of production involved in the production process on the farm, the land is the most constant one [Mandal and Dhara 2012]. The average value of production per 1 ha of arable land in the years 2014–2016 in the EU amounted to 2888.4 euro and showed an upward trend. In the new member states, the productivity of the land factor was on average 20% lower than the average in the EU-15, and also 12% lower than in the entire Community. The highest rates were recorded in Malta and Cyprus, while in other countries, it was lower than the average for the EU.

Table 2. Productivity of land in farms of new EU member states against the background of its old members in 2014–2016 (euro·ha^{-1})

Specification	2014	2015	2016	2014–2016	UE-15=100 (in 2014–2016)
Bulgaria	1008.6	1006.4	953.2	990.0	31.0
Cyprus	3143.5	3396.2	3210.0	3249.6	101.9
Czech Republic	1513.6	1487.1	1502.3	1501.0	47.0
Estonia	892.3	888.3	809.2	863.3	27.1
Croatia	1458.2	1397.7	1712.7	1532.8	48.0
Hungary	1418.0	1504.9	1592.8	1504.5	47.2
Lithuania	764.1	794.2	705.5	754.1	23.6
Latvia	832.1	907.8	849.7	863.1	27.1
Malta	15025.2	15604.0	15722.4	15449.5	484.3
Poland	1582.7	1527.5	1397.6	1501.9	47.1
Romania	1238.8	1207.7	1270.9	1239.6	38.9
Slovakia	1182.8	1120.3	1266.4	1189.6	37.3
Slovenia	2273.5	2431.1	2445.5	2383.3	74.7
UE-13	2487.2	2559.5	2572.2	2540.2	79.6
UE-15	3217.9	3161.5	3191.3	3190.3	100.0
UE-28	2878.7	2882.0	2903.9	2888.4	90.5

Source: as in Table 1

Productivity of labour is generally the most important measure of productivity. The importance of the level of labour efficiency results from the fact that this measure determines the income situation, as well as the possibility of internal accumulation in agriculture [Poczta and Kołodziejczak 2008]. As it can be seen from Table 3, labour productivity in farms showed differences between member countries. There was also a large distance in this area dividing the new member states from the old EU members. On average, in 13 countries that joined the EU after 2004, labour productivity in 2014–2016 was 68.4% lower than in the EU-15. In none of the countries studied, the level of analyzed indicator has reached its average level in the European Union. The most effective labour factor was used in countries such as Estonia, the Czech Republic, Slovakia and Hungary. Kołodziejczak [2015] proves that the reason for differences between individual countries is primarily the number of people working directly in agriculture and degree of land concentration.

Table 3. Productivity of labour in farms of new EU member states against the background of its old members in 2014–2016 (euro·AWU^{-1})

Specification	2014	2015	2016	2014–2016	UE-15=100 (in 2014–2016)
Bulgaria	17992.6	16473.3	16583.0	17032.1	17.8
Cyprus	26451.9	26718.2	25475.2	26214.1	27.5
Czech Republic	54824.8	54059.5	54897.1	54593.1	57.2
Estonia	58303.0	59776.2	55092.0	57741.0	60.5
Croatia	12076.4	13359.9	18251.7	14553.1	15.2
Hungary	43084.0	46382.1	48624.8	46003.3	48.2
Lithuania	20267.6	21772.8	20374.7	20797.1	21.8
Latvia	26803.5	29579.7	27499.5	27951.9	29.3
Malta	29835.7	31208.0	31558.7	30861.7	32.3
Poland	17438.3	17193.9	16101.8	16916.2	17.7
Romania	10118.6	9997.2	11222.6	10436.4	10.9
Slovakia	50626.5	47602.3	54307.2	50827.7	53.2
Slovenia	16751.9	17993.9	19604.1	18074.7	18.9
UE-13	29582.7	30162.8	30737.9	30154.0	31.6
UE-15	96825.7	94778.3	94801.1	95479.1	100.0
UE-28	65605.7	64778.2	65057.5	65149.6	68.2

Source: as in Table 1

Table 4. Current productivity of capital in farms of new EU member states against the background of its old members in 2014–2016 (euro)

Specification	2014	2015	2016	2014–2016	UE-15=100 (in 2014–2016)
Bulgaria	0.96	0.94	0.92	0.94	85.6
Cyprus	1.07	1.10	1.11	1.10	99.7
Czech Republic	0.92	0.86	0.85	0.88	79.8
Estonia	0.87	0.87	0.81	0.85	77.3
Croatia	1.10	1.12	1.23	1.15	105.0
Hungary	1.05	1.02	1.07	1.05	95.4
Lithuania	0.98	1.04	0.92	0.98	89.2
Latvia	0.91	0.96	0.92	0.93	84.7
Malta	1.24	1.25	1.27	1.25	114.1
Poland	1.12	1.12	1.10	1.12	101.5
Romania	1.48	1.36	1.35	1.39	126.9
Slovakia	0.83	0.82	0.90	0.85	77.2
Slovenia	0.92	0.93	0.94	0.93	84.6
UE-13	1.03	1.03	1.03	1.03	93.9
UE-15	1.10	1.09	1.10	1.10	100.0
UE-28	1.07	1.06	1.07	1.07	97.2

Source: as in Table 1

Diversification of capital productivity in the countries studied and in relation to the EU-15 and EU-28 average is lower than for the other two production factors – land and labour. The value of production per 1 euro of total costs in 2014–2016 was, on average, in the 13 countries studied, 1.03 euro and it was 6.1% lower than in the EU-15. Higher than average in the old member states, the value of the analyzed index was recorded in Malta, Croatia, Romania and Poland. On average, in the EU, the capital of 1 euro participated in the creation of agricultural production with a value of 1.07 euro.

CONCLUSIONS

The conducted research revealed an unfavorable competitive position of agricultural holdings of new member states against the background of farms that were members of the European Union before 2004. The EU-15 countries achieved, on average, a 20% advantage in land productivity and a 68% labour productivity over the period considered. In none of

the new member states, the average level of labour productivity indices for 28 European Union countries has been reached. In the case of land productivity, such a level was recorded only in Malta and Cyprus, but the agriculture of these countries does not play a major role in the EU. According to Eurostat data [https://ec.europa.eu/eurostat/data/database], the share of the value of agricultural production of these countries in the EU production in 2016 was respectively 0.17% and 0.03%. Capital productivity less differentiated the countries studied, and the distance separating them from EU-15 countries was not as large as in the case of land and labour. The productivity of production factors is shaped not only by the quantity and quality of resources, but also by relations between them [Pawlak 2013]. Referring to these opinions, it should be assumed that structural transformations and financial support of the agricultural sector in new member states will contribute to improving the competitiveness of agricultural holdings and the entire agricultural sector.

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Streszczenie. Celem opracowania była ocena konkurencyjności gospodarstw rolnych nowych krajów członkowskich Unii Europejskiej na tle krajów tzw. starej Unii w latach 2014–2016. Badania przeprowadzono, korzystając z bazy danych unijnego FADN. Za miarę konkurencyjności przyjęto cząstkowe wskaźniki produktywności czynników produkcji (ziemi, pracy, kapitału). Badania wykazały niekorzystną pozycję konkurencyjną gospodarstw rolnych nowych krajów członkowskich w zakresie produktywności ziemi i pracy. Produktywność kapitału w mniejszym stopniu różnicowała badane kraje, a dystans dzielący je od krajów UE-15 nie był tak duży jak w przypadku dwóch pozostałych czynników produkcji. Należy to tłumaczyć m.in. relatywnie mniejszym potencjałem produkcyjnym gospodarstw rolnych oraz niskimi nakładami inwestycyjnymi. Średnia wartość tych nakładów w przeliczeniu na 1 ha użytków rolnych w 13 krajach UE w badanych latach była o 44% mniejsza niż w krajach UE-15.

Słowa kluczowe: konkurencyjność, Unia Europejska, gospodarstwa rolne, produktywność

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