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REGIONAL COMPETITIVENESS OF AGRICULTURE IN POLAND

Abstract: Regional competitiveness determines a an ability to compete on agricultural markets and allows an assessment of the importance of agriculture in regional development. This article presents a model of the regional competitiveness of agriculture in Poland based on a conception of a regional competitiveness pyramid for a single-branch sector that only embraces agriculture. Decisions in support of agricultural competitiveness must be adjusted to the natural and organisational-economic conditions of individual regions. Ample labour resources and a low level of environmental pollution are beneficial for production diversification and, together with state intervention, are factors strengthening the position of regions in their competitive struggle.

Key words: competitiveness, agriculture, regional competitiveness of agriculture, Poland

1. INTRODUCTION

The competitiveness of agriculture is derived from the condition of the natural environment and social factors. This gives rise to a discrepancy between economic competitiveness as determined primarily by the market, as an effect of choices made by autonomous sellers and buyers, and competitiveness, in a spatial approach, which takes into consideration natural conditions and social activity as goods essential to farming.

Regional competitiveness determines the ability to compete on agricultural markets and allows an assessment of the importance of farming in regional development. Changes in a region's agriculture, also in its competitiveness and incomes of its population, occur under the influence of domestic conditions affecting agriculture itself and its surrounding environment. They are also an effect of external processes, especially globalisation and integration within the European Union. Competitiveness has become a decisive factor for production, employment and

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efficiency, and is also a result of a new type of specialisation in farming systems involving the use of various methods to produce concrete goods.

Competitiveness presents a complex research problem because of the opaque nature of this concept, the multitude and diversity of factors, and the complexity of the studied process itself. As a rule, competitiveness is only defined by its effects, namely competitive advantage and a competitive position. Hence it is a theoretical notion without clear features that would allow making unambiguous generalisations. In this approach competitiveness might be best described as being similar to establishing a ranking table, so it is a measure of potential.

2. THEORETICAL FOUNDATIONS OF A MODEL OF THE REGIONAL COMPETITIVENESS OF AGRICULTURE

The notion of competitiveness is subject to a variety of interpretations. These seem to be justified in light of their interactions and links with other elements of socio-economic and environmental systems. Competitiveness in an economic sense means rivalry in accessing limited goods that are subject of market transactions [Porter 1990]. Since economic literature lacks a single concept of competitiveness, a definition has been chosen best fitting the specific nature of the agricultural sector. According to Freebairn [1986], competitiveness means an *ability to deliver goods and services at the time, place and form sought by buyers at prices as good as or better than those of other potential suppliers whilst earning at least opportunity cost returns on resources employed*. This definition considers not only the market but also factors of production, and makes a distinction between two types of competitiveness. One refers to competition on domestic and international commodity markets, the other involves factors of production engaged in the manufacture of specific goods. They should at least ensure opportunity cost returns. Obtaining good results is the target of all economic entities (including agricultural holdings) and this effort affects the development level of regions. A free market leads to ever more pronounced inequalities among regions; a significant role in their reduction can be played by public authorities which, through their functions and decisions, can help to boost the economic level of regions and narrow disparities. Agriculture differs from other sectors of the economy in that farmers derive no benefit from moving their resources to more efficient sectors. The position of agriculture is set permanently because farmland and the potential of family labour are not easily transferable in principle.

Competitiveness is considered in two of its aspects of international and domestic in many studies and theories presented. Numerous works [Scott 1985; Porter 1990; Hunt 2000; Reiljan et al. 2000] state that international competitiveness means the ability of domestic firms to locate on foreign markets and develop export efficiency. In domestic competitiveness, there should be differentiation between dynamic and static competitiveness. Dynamic domestic competitiveness is a process implying the strength and ability of agriculture to improve its position vis-a-vis the remaining, non-agricultural, branches of the national economy. In a static approach, the domestic competitiveness of agriculture is a state defined as its economic position

against the other sectors the national economy at a given time, and more precisely, as its situation in the structure of the national economy.

According to a European Commission report [1999], the notion of regional competitiveness relies on the ability to produce commodities and services that meet the demands of international markets, thus ensuring steady and relatively high incomes to a region. In terms of international competition, regions compete in terms of the level of income and employment. Special attention was paid to the fact that decisions to open borders and reduce entry barriers to markets within the EU tended to make competition stiffer. The result was, on the one hand, lower production costs, but on the other, a growing polarisation in regional development. The European Community and Commissions visible response to those processes has been its policy of intervention to build better economic, social and spatial cohesion so as to make the competitive conditions of regions more equal. For new EU members, this role is played by competitiveness programmes financed under the European Regional Development Fund [Gardiner et al. 2004].

Much analysis has been made of the methodological aspects of modelling the competitiveness of regions, cities or metropolitan areas [Begg 1999; Lengyel 2000, 2003; Kitson et al. 2004; Turok 2004] and the competitiveness of networks [Polenske 2004]. Competitiveness in a sense of its weight on agriculture in a spatial approach is considered here from the point of view of its contribution to the economy. The competitive potential of agriculture is expressed by the place it occupies in a ranking of regions. Under this perspective, competitiveness is treated as one of the measures of which region is more and which is less agricultural. Competitiveness as an ability to compete on the market is an economic category referring to economic entities and the segment of the market on which they operate. A condition of this type of competitiveness is a free market. The theoretical assumptions adopted in the present research depart from this general notion. Regional competitiveness, by the criteria given in the literature, is connected with the supply side of the market and makes it possible to assess the conditions and factors that differentiate space and are favourable or not to specific kinds of economic activity. In farming, as a result of the EC designed Common Agricultural Policy, we deal with a defective market because this sector is, and is likely to remain, an area of intervention measures. The problem is the structure and nature of those measures, which should have been targeted at an increase in the incomes of agricultural producers.

The theoretical basis for a model of the regional competitiveness of agriculture was the conception of a regional competitiveness pyramid [Gardiner et al. 2004]. Kołodziejczak [2010] defined the regional competitiveness of agriculture as *the ability of a region to make use of its environmental, social, economic and institutional resources in order to achieve and maintain a competitive position in the country in terms of the contribution of its agriculture to the national economy*. Since the basic determinant of the potential of agriculture is land – the agricultural production space, it was decided that in a regional context competitiveness was a result of the productivity of land and labour and the engagement of capital in agriculture (see Figure 1). Those are measures differentiating regions and following from spatial heterogeneity this imposes a specific organisation of natural and

man-made elements making competition among regions possible through costs of access to resources that are of interest to farmers.

The factors that determine regional competitiveness of agriculture are natural resources, the agrarian structure, farming practices, farming systems, and social resources, as well as the social structure and skills of workforce. Also important is infrastructure in rural areas, support for agriculture-related institutions, and social capital. That these are influential factors is shown by the scale of farmers' reliance on financial support under EU programmes for agriculture and rural areas and the introduction of new production technologies. The impact of the institutional environment can reinforce a region's position and guide structural changes in its agriculture, as well as to help it to improve the use of its potential and boost its competitiveness. Those factors account for differences in the productivity of land and labour among regions.

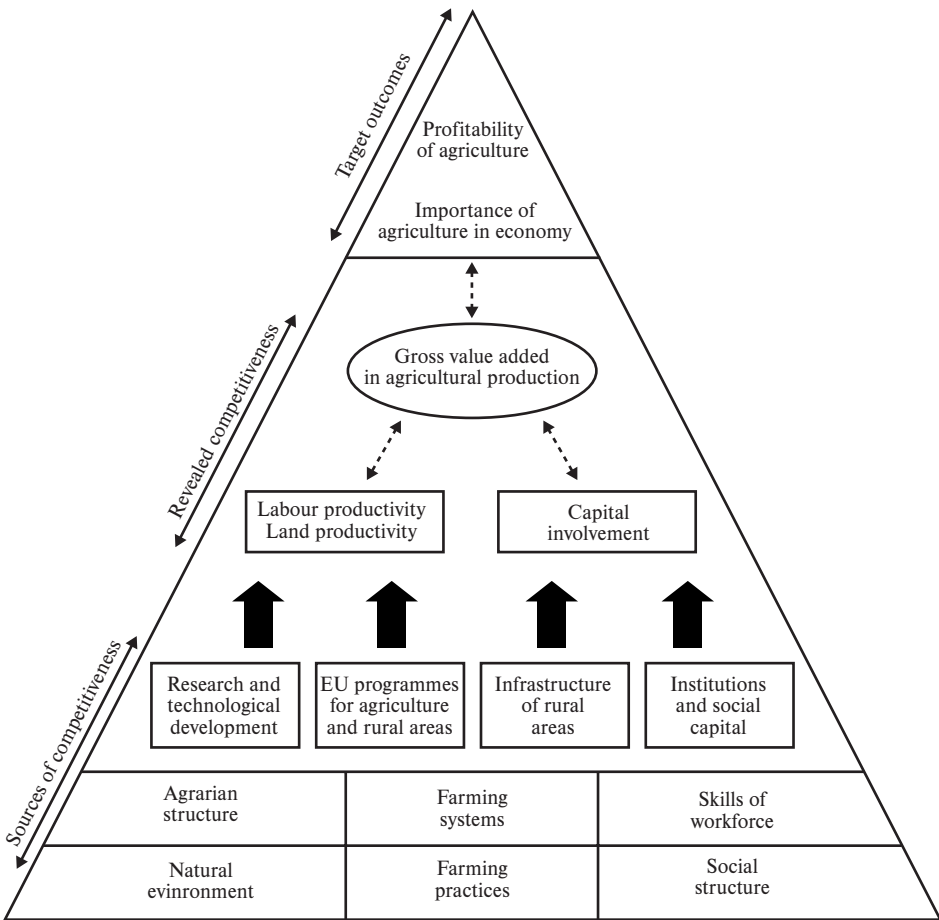


FIGURE 1. Model of the regional competitiveness of agriculture

RYSUNEK 1. Model regionalnej konkurencyjności rolnictwa

Source: own compilation on the basis of Begg [1999], European Commission [1999], Jansen-Butler [1996], Lengyel [2000, 2003] and Gardiner et al. [2004].

3. DATA AND METHODS

Regional competitiveness can be measured in a variety of ways using; (1) an analysis of competitiveness factors, (2) theoretical models of competitiveness, (3) specially constructed composite indices of competitiveness, and others [Snieška, Bruneckiene 2009]. The opinion predominating in the literature is that competitiveness cannot be determined by selected social and economic indicators [de Vet et al. 2004; Huggins 2003; Lengyel 2003]. This is why approach (3) seems to be the most suitable since it allows a more comprehensive measurement of competitiveness.

The regional index of competitiveness is defined by many scholars as an artificial quantitative or qualitative instrument [Snieška, Bruneckiene 2009; Huggins 2003]. It is a composition of sub-indices deriving from a multi-criteria approach to the issue of competitiveness (e.g. industrialisation, cohesion, the integration of markets, etc.).

The procedure of calculating a synthetic competitiveness index has as a rule several stages, as shown in a number of studies [e.g. Snieška, Bruneckiene 2009; Huggins 2003; Giovanni et al. 2005]. The stages are usually the following:

- (1) working out a theoretical model for the problem under analysis,
- (2) selecting normalisation and standardisation variables,
- (3) grouping and weighing of indicators,
- (4) calculating values of the competitiveness index, and
- (5) analysing the uncertainty and sensitivity of the competitiveness index.

At the first stage there is usually a reference to one of the well-know models of competitiveness, e.g. the national diamond model, the pyramid model of regional competitiveness, or the double diamond model, although there are works that do not refer to any theoretical basis. Next, standardisation or normalisation of a variable is performed using one of the multitude of methods. Many authors emphasise that the most debatable of all is stage three – the calculation of weights for the individual partial indicators. There is no convincing rule on the basis of which these weights might be assigned. Some scholars [e.g. IMD 2004] apply equal weights to all indicators, without any justification whatsoever. At stages four and five, it is crucial to calculate the values of the competitiveness index with suitable accuracy and to determine its sensitivity and resistance to potential uncertainty as well as the effect of those sources of uncertainty on the structure of the index. As Snieška and Bruneckiene [2009] observe, possible problems with obtaining correct values of the competitiveness index may derive from:

- (1) techniques of selecting factors and indicators,
- (2) techniques of factor grouping,
- (3) strength of the correlation between factors,
- (4) methods of data acquisition,
- (5) methods of data standardisation and normalisation,
- (6) techniques of weighing variables and factors, and
- (7) mathematical expression of the function of the competitiveness index. The reliability of the index obtained is as a rule tested using statistical methods, such as correlation analysis, cluster analysis, or factor analysis.

In this paper the regional competitiveness of agriculture was calculated, as in Snieška and Bruneckiene [2009], using a multi-step procedure described above. In step one it was established what the chief groups of factors affected the competitiveness of agriculture in Poland and how it differed among the regions. Here use was made of a more general model of competitiveness, such as the regional competitiveness pyramid [Gardiner et al. 2004], but reduced to a single-branch sector only embracing agriculture. Three groups of factors characterising the regional competitiveness of agriculture were identified in this model. The first included sources of competitiveness, namely human resources, farming conditions, farming practices, and capital inputs. The second comprised direct effects of competitiveness, and the third, its target outcomes. In step two indicators were identified that characterised the individual groups of factors. There were 28 of them, listed in Table 1. From data collected it has been possible to assemble a full set of values of those indicators for the 16 regions of Poland for the years 2006 and 2009.

TABLE 1. Indicators used in the analysis of the regional competitiveness of agriculture
TABELA 1. Wskaźniki wykorzystane w analizie regionalnej konkurencyjności rolnictwa

Group of factors	Variable	Symbol
Sources of competitiveness SC	1. Human resources: D – farm workers per 100 ha AL Y – per cent farm operators with higher and secondary education AA – unemployment rate (%) in rural areas AB – dependency ratio in rural areas	HR
	2. Farming conditions: B – index of valuation of agricultural production space C – mean size of agricultural holding in ha E – per cent agricultural land eligible for single payments V – per cent LFA agricultural land eligible for payments	FC
	3. Farming practices: M – coefficient of intensity of plant production N – coefficient of intensity of animal production T – per cent AL under sustainable agriculture U – per cent AL under organic production X – per cent AL under integrated production	FP
	4. Capital inputs: J – consumption of NPK fertilisers in kg per ha AL K – investment outlays in PLN per ha AL L – value of gross fixed assets in '000 PLN per 100 ha AL Z – area of agricultural land per tractor AC – per cent drained agricultural land	CI
Direct effects of competitiveness DEC	H – global agricultural production in PLN per ha AL I – commercial production in PLN per ha AL O – purchase of cattle liveweight in kg per head of cattle P – purchase of pig liveweight in kg per head of swine Q – purchase of milk in l per cow R – purchase of basic cereals in kg per ha cropland S – purchase of potatoes in kg per ha cropland	
Target outcomes of competitiveness TO	F – gross value added in agriculture, forestry and hunting in PLN per worker G – proportion of gross value added in agriculture, forestry and hunting in total gross value added W – mean monthly disposable income from individually operated farm per household member in PLN.	

Source: own compilation.

The indicators listed in Table 1 were standardised using the well-known formula:

$$Z_i(X) = \frac{X_i - \bar{X}}{S(X)},$$

where $S(X)$ denotes the standard deviation of variable X .

Since some of the indicators listed in Table 1 were destimulant in nature, before standardisation they were changed into stimulants. The formula used for this purpose was:

$$X' = \frac{\max_i X_i - X_i}{\max_i X_i}.$$

In step three, relationships were established between the already transformed indicators and factors affecting the regional competitiveness of agriculture. It was assumed that those relationships took the form of the following system of linear equations:

$$HR = a_1D + a_2Y + a_3AA + a_4AB,$$

$$FC = a_5B + a_6C + a_7E + a_8V,$$

$$FP = a_9M + a_{10}N + a_{11}T + a_{12}U + a_{13}X,$$

$$CI = a_{14}J + a_{15}K + a_{16}L + a_{17}Z + a_{18}AC,$$

$$SC = a_{19}HR + a_{20}FC + a_{21}FP + a_{22}CI,$$

$$DEC = a_{23}H + a_{24}I + a_{25}O + a_{26}P + a_{27}Q + a_{28}R + a_{29}S,$$

$$TO = a_{30}F + a_{31}G + a_{32}W.$$

The values of the individual factors, viz. HR, FC, FP and CI, and groups of factors, as well as SC, DEC and TO, as well as their weights a_i were calculated using factor analysis. Their extraction was made using the principal components method on the basis of a correlation matrix, with only the first factor being taken into consideration. For the factors distinguished by the principal components method to keep the maximum explained variance of the primary variables, they were not subjected to rotation. Their values were calculated using Bartlett's method². This procedure was carried out twice: for the 2006 and 2009 data. The application of factor analysis made it possible, on the one hand, to obtain objective values of weights in the above system of equations, and on the other, it guaranteed minimum information loss through aggregated variables.

In step four, a regional agricultural competitiveness index was calculated for each region I on the basis of the formula:

$$ECI_{i,t} = (SC_{i,t} + DEC_{i,t} + TO_{i,t})\sqrt{3}$$

where $t = 2006$ or $t = 2009$. Since the values of factors obtained from the SPSS program are standardised, to preserve the scale of values of the RCI index it has the form of the sum of factors multiplied by $\sqrt{3}$.

² Factor analysis and the principal components method are well-known research tools, hence their mathematical-statistical underpinnings will not be described here. For further reference, see Morrison [2005].

4. RESULTS

The extraction of factors from the set of primary variables performed according to the above assumptions yielded factors HR, FC, FP and CI, as well as groups of factors **SC**, **DEC** and **TO**.

TABLE 2. Extraction sums of squared loadings in 2006 and 2009

TABELA 2. Ekstrakcja sumy kwadratów ładunków w latach 2006 i 2009

Factor	Extraction sums of squared loadings			
	2006		2009	
	total	% variance	total	% variance
HR	2.787	69.677	2.523	63.069
FC	1.969	49.226	2.068	51.710
FP	2.333	46.655	2.570	51.395
CI	2.644	52.886	2.120	42.393
SC	2.095	52.370	2.285	57.133
DEC	2.824	40.345	2.616	37.368
TO	1.764	58.791	1.790	59.674

Source: own calculations.

The factors thus obtained differed in the variance of primary variables accounted for (cf. Table 2) both between equations and within equations between the individual years. In the year 2006, three of the factors accounted for less than 50% of the variance of the primary variables, while for 2009 there were two such factors. In both cases the greatest proportion of the variance was explained by the human resources factor (HR), and the smallest, by the factor of direct effects of competitiveness (**DEC**). In all cases, the factors had eigenvalues greater than 1.

TABLE 3. Factor structure for the year 2006

TABELA 3. Struktura czynnikowa dla 2006 r.

Var. HR	Var. FC	Var. FP	Var. CI	Var. SC	Var. DEC	Var. TO
D <i>-.891</i>	B <i>-.790</i>	M <i>.839</i>	J <i>.746</i>	HR <i>.926</i>	H <i>.601</i>	F <i>.165</i>
Y <i>.873</i>	C <i>.507</i>	N <i>.732</i>	K <i>.765</i>	FC <i>.515</i>	I <i>.496</i>	G <i>.949</i>
AA <i>-.738</i>	E <i>.367</i>	T <i>.215</i>	L <i>-.364</i>	FP <i>-.385</i>	O <i>.621</i>	W <i>.914</i>
AB <i>.828</i>	V <i>.976</i>	U <i>-.762</i>	Z <i>-.852</i>	CI <i>.908</i>	P <i>.674</i>	
	X <i>.683</i>	AC <i>.803</i>			Q <i>-.472</i>	
					R <i>-.825</i>	
					S <i>-.688</i>	

Source: own calculations. In italics, statistically insignificant coefficients of correlation.

TABLE 4. Factor structure for the year 2009

TABELA 4. Struktura czynnikowa dla 2009 r.

Var. HR	Var. FC	Var. FP	Var. CI	Var. SC	Var. DEC	Var. TO
D <i>.824</i>	B <i>-.699</i>	M <i>.898</i>	J <i>.721</i>	HR <i>-.906</i>	H <i>.517</i>	F <i>.367</i>
Y <i>-.761</i>	C <i>.604</i>	N <i>.600</i>	K <i>.020</i>	FC <i>.607</i>	I <i>.698</i>	G <i>.923</i>
AA <i>.785</i>	E <i>.596</i>	T <i>.537</i>	L <i>-.568</i>	FP <i>-.409</i>	O <i>-.413</i>	W <i>.897</i>
AB <i>-.805</i>	V <i>.927</i>	U <i>-.705</i>	Z <i>-.881</i>	CI <i>.964</i>	P <i>-.236</i>	
		X <i>.786</i>	AC <i>.708</i>		Q <i>.922</i>	
					R <i>.454</i>	
					S <i>.761</i>	

Source: own calculations. In italics, statistically insignificant coefficients of correlation.

During the period 2006–2009 the factor structure showed some stability. In the case of factors **HR** and **SC**, coefficients of correlation changed their signs to opposite ones, but the absolute value of factor loads remained similar in both 2006 and 2009. The **FC** factor had a less stable structure. There was an increase in the impact of variable **E** (per cent **AL** under single payments), which had a significant load factor in 2009. There was a similar change in the factor characterising farming practices, **FP**. What became significant here was the load factor of variable **T** (per cent **AL** under sustainable agriculture). Major changes occurred in the structure of the capital inputs factor, **CI**. There was a radical decline in the importance of variable **K** (investment outlays in **PLN** per ha **AL**), which stopped having a statistically significant effect on the **CI** factor; instead, variable **L** gained prevalence (gross fixed assets in thous. **PLN** per 100 ha **AL**). The greatest changes occurred in the structure of the **DEC** factor. Statistically significant became the factor loads of two variables: **I** (commercial production in **PLN** per ha **AL**) and **Q** (purchase of milk in **l** per cow), while variables **O** (purchase of cattle liveweight in **kg** per head of cattle), **P** (purchase of pig liveweight in **kg** per head of swine) and **R** (purchase of basic cereals in **kg** per ha cropland) became insignificant.

There were similar differences in coefficients a_i in factor equations for the individual years. The equations calculated for 2006 took the form:

$$\begin{aligned}
 HR &= -.320D + .313Y - .265AA + .297AB, \\
 FC &= -.401B + .258C + .186E + .496V, \\
 FP &= .360M + .314N + .092T - .327U + .293X, \\
 CI &= .282J + .289K - .138L - .322Z + .304AC, \\
 SC &= .442HR + .246FC - .184FP + .433CI, \\
 DEC &= .213H + .176I + .220O + .239P - .167Q - .292R - .244S, \\
 TO &= .094F + .538G + .518W.
 \end{aligned}$$

For 2009 the coefficient values used in those equations were slightly different:

$$\begin{aligned}
 HR &= -.326D - .302Y + .311AA - .319AB, \\
 FC &= -.338B + .292C + .288E + .448V, \\
 FP &= .350M + .233N + .209T - .274U + .306X, \\
 CI &= .340J + .009K - .268L - .415Z + .334AC, \\
 SC &= .397HR + .266FC - .179FP + .422CI, \\
 DEC &= .198H + .267I + .158O - .090P + .352Q + .174R + .291S, \\
 TO &= .205F + .515G + .501W.
 \end{aligned}$$

The coefficients of factor equations changed their signs and values in accordance with the factor structures determined for the years 2006 and 2009. The values of the competitiveness index allowed the voivodships to be ordered from ‘the worst’ to ‘the best’ in terms of the competitiveness of their agriculture as expressed by the variables studied (see Figure 2). The 2006 ranking opened with the voivodships of Wielkopolska, Podlasie and Warmia-Mazuria, and closed with Silesia, Pomerania, Under Carpathia and Lower Silesia. In 2009 the old leaders were joined by West

Pomerania, while the last places were occupied by Lublin, Świętokrzyska Land, Silesia, Under Carpathia and Małopolska.

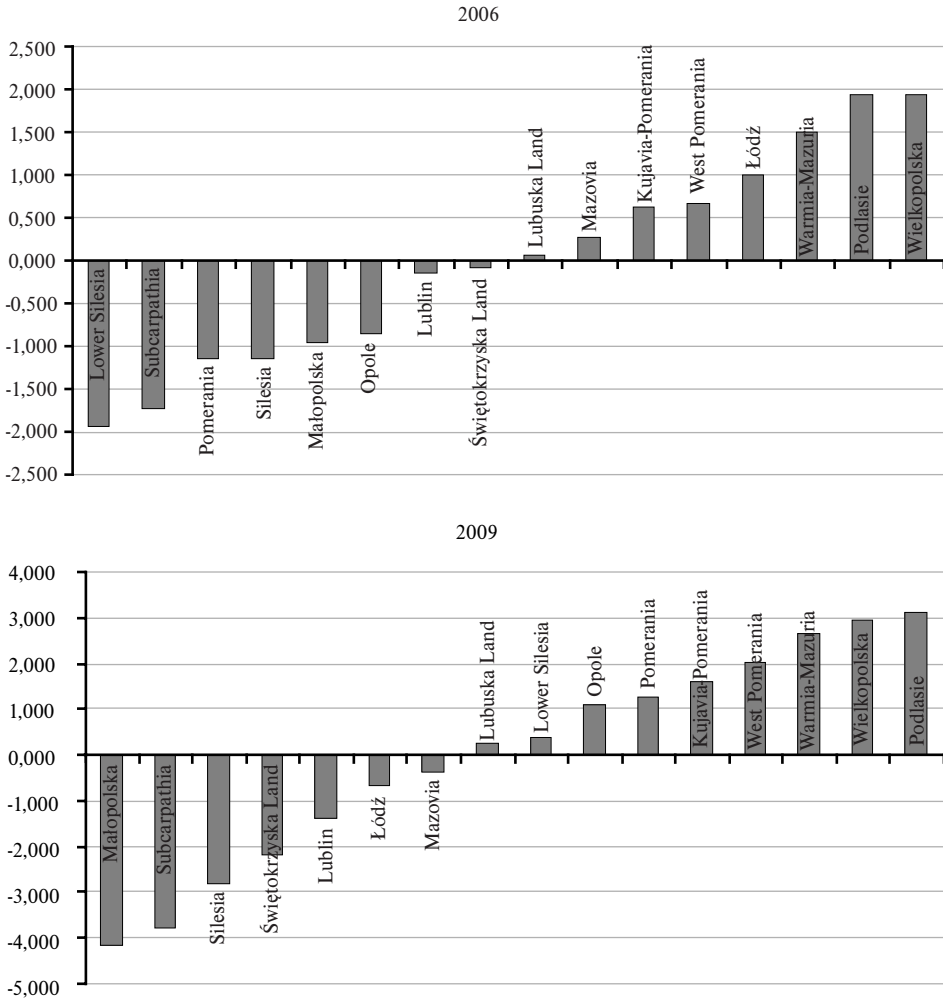


FIGURE 2. Ordering of Provinces by a competitiveness index for the years 2006 and 2009

RYSUNEK 2. Uporządkowane województwa według wartości indeksu konkurencyjności dla lat 2006 i 2009

Source: own compilation.

On analysis of the distribution of competitiveness indices for the years 2006 and 2009, the voivodeships were divided into four classes of similar levels of agricultural competitiveness. They form compact clusters. In 2006 the most competitive regions included Wielkopolska and those of northern Poland, and Podlasie and Warmia-Mazuria (see Figure 3). In 2009 they were joined by West Pomerania. While those regions differ in the character of their agriculture, they play an important role in the national economy and are competitive for the remaining voivodeships.

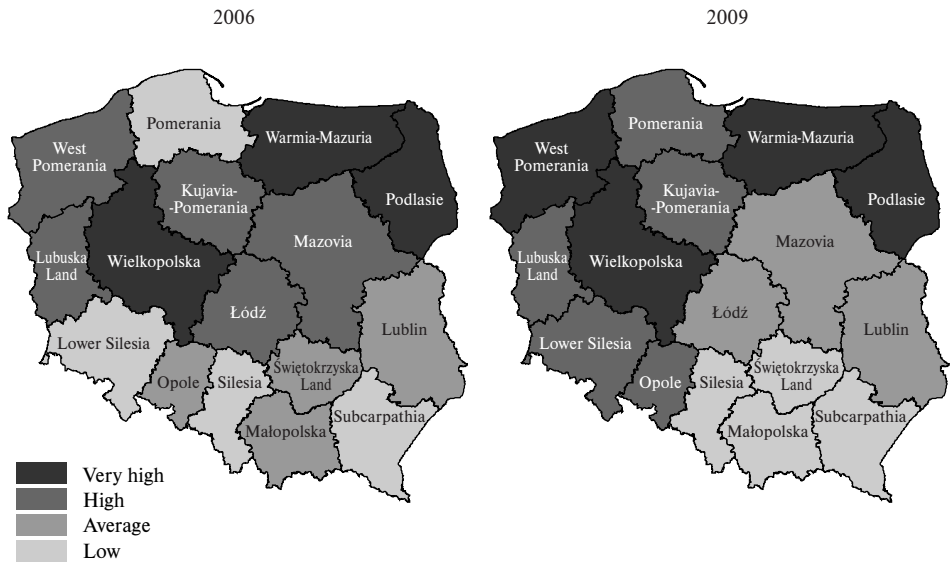


FIGURE 3. Regional competitiveness of agriculture in Poland in the years 2006 and 2009
 RYSUNEK 3. Regionalna konkurencyjność rolnictwa w Polsce w latach 2006 i 2009

Source: own compilation.

The determination of the competitiveness of those regions were their farming conditions. Additional factors important in Wielkopolska were farming practices, and in 2006, capital inputs; in Warmia-Mazuria, capital inputs, and in Podlasie, human resources. In each of those voivodeships different factors have a decisive effect on agricultural production. Predominant in Warmia-Mazuria and West Pomerania are large-scale agricultural holdings specialising in the commercial production of cereals and rape. Wielkopolska has high figures in global and commercial production per ha AL and large investment outlays in PLN per ha AL. Farming in Podlasie is a system of intensive organisation of labour-consuming production, and in Wielkopolska, of intensive organisation of a capital-consuming one. In the research, Wielkopolska and Opole had the highest investment outlays per ha AL. In West Pomerania and Podlasie, the area of AL under organic production exceeded 2% of total AL. In 2006 the agriculture of West Pomerania and Lubuska yielded high volumes of commercial plant production and was less competitive than that of the already mentioned voivodeships. Apart from those regions, the category of highly competitive voivodeships included those in the central and eastern parts of the country, viz. Łódź, Mazovia and Kujavia-Pomerania with similar proportions of farm workers and mean farm sizes. In 2009 the group of voivodeships with high agricultural competitiveness was made up of Pomerania, Kujavia-Pomerania, Lubuska, Lower Silesia, and Opole. In 2006 the regions of low competitiveness were Lower Silesia, Silesia, Subcarpathia and Pomerania, while in 2009 the group changed to include Silesia, Świętokrzyska, Małopolska, and Subcarpathia, all with an unfavourable agrarian structure.

5. CONCLUSIONS

The presented model of the regional competitiveness of agriculture is based on a regional competitiveness pyramid reduced to a sectoral approach only embracing agriculture. On the basis of the various notions of the competitiveness of regions, a definition of the regional competitiveness of agriculture was formulated for the purposes of the present research. It is:– “the ability of a region to make use of its environmental, social, economic and institutional resources in order to achieve and maintain a competitive position in the country in terms of the contribution of its agriculture to the national economy”. The regional competitiveness of agriculture cannot be fully defined by one or two economic and social indicators; its measurement must be more comprehensive. In this research, EU intervention measures under the Common Agricultural Policy had to be taken into consideration in Poland’s agricultural activity, because in the European Union this segment of the market is defective.

In the model of the regional competitiveness of agriculture, three groups of factors were distinguished: sources of competitiveness (human resources, farming conditions, farming practices, and capital inputs), direct effects of competitiveness, and target outcomes of competitiveness.

The research for the years 2006 and 2009 demonstrated that the decisive factors affecting the level of competitiveness were farming conditions, especially agricultural land under single payments, and farming practices involving an increase in the area of land under sustainable agriculture. In the case of capital inputs, over the three years under study the significance of investment outlays in PLN per ha AL decreased in favour of gross fixed assets in ‘000 PLN per 100 ha AL. In the group of direct effects of competitiveness, the significant factor proved to be commercial production in PLN per ha AL.

An analysis of the distribution of competitiveness indices over the study period showed Podlasie, Wielkopolska and Warmia-Mazuria to have reinforced their leading position as the most competitive regions in terms of agriculture. It was found that an unfavourable agrarian structure of Silesia, Świętokrzyska Land, Małopolska and Subcarpathia (small farms, unclear ownership status) caused those voivodeships to make little use of financial assistance under the Common Agricultural Policy, thus contributing to their low competitiveness level.

Decisions intended to boost agricultural competitiveness must be adjusted to the natural and organisational-economic conditions of the individual regions because it is those conditions that determine their farming specificity and systems. Ample labour resources and a low level of environmental pollution are beneficial for production diversification and farming under environment-friendly systems. Together with state intervention, they are factors strengthening the position of regions in their competitive struggle.

The study of the regional competitiveness of agriculture demonstrated that it was possible to determine the level of the competitiveness of regions in an approach where the economy was reduced to a single sector – agriculture. This is a novel type of research, significant not only for methodological reasons, but also because it can provide important information for the state’s agricultural policy.

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REGIONALNA KONKURENCYJNOŚĆ ROLNICTWA W POLSCE

Streszczenie: Konkurencyjność regionalna określa potencjalne możliwości rywalizowania na rynkach rolnych i pozwala na ocenę znaczenia rolnictwa w rozwoju regionów. Artykuł ten przedstawia model regionalnej konkurencyjności rolnictwa stworzony na bazie koncepcji „piramidy regionalnej konkurencyjności” dla sektora gałęziowego obejmującego wyłącznie rolnictwo. Wspieranie decyzji dotyczących zwiększania konkurencyjności rolnictwa musi być dostosowane do warunków przyrodniczych i organizacyjno-ekonomicznych poszczególnych regionów w Polsce. Duże zasoby siły roboczej i małe skażenie środowiska przyrodniczego sprzyjają różnorodności produkcji, a z uwzględnieniem interwencjonizmu państwowego są czynnikiem wzmocniającym pozycje regionów w walce konkurencyjnej.

Słowa kluczowe: konkurencyjność, rolnictwo, regionalna konkurencyjność rolnictwa, Polska