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Changes in the production factor's structures in agriculture in the light of price adjustments. A case study of selected EU countries[1]

1. Introduction

Generally low elasticity of supply is considered to be natural for agriculture, because of the sector's strong dependence on external factors (e.g. weather) and biological processes (Hamulczuk i Stańko 2008, *p.* 20). This fact entails a number of implications, determining largely, a distinct and special nature of agriculture in a market economy. The low elasticity of the supply of agricultural commodities is also believed to be the channel of spreading economic crises in agriculture (Stępień 2011, p. 33). Due to the low elasticity of demand, agricultural producers are not able to respond appropriately to declines in demand and prices, which causes overproduction of agricultural commodities and deepens the imbalance. Moreover, this mechanism acts asymmetrically, affecting to a greater extend smaller farms. The bigger farmers, due to the more technically advanced production

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1 The article uses fragments of a paper delivered at the conference „Prices in the agri-food sector and its surroundings" at 3rd of December 2015 in Warsaw.

methods are in fact able to adjust flexibly their supply to the market's price conditions. At this point also occurrence of the King effect in the agriculture should be mentioned. If the price elasticity of demand is lower than supply elasticity, in the case of artificially maintained high prices, more than proportional increase in production occurs and the crisis of overproduction is deepening (Hamulczuk i Stańko 2008, p. 49). The low price elasticity of the supply of agricultural raw materials can be also considered as determinant of decline in the relation of input and output prices (the price scissors). Declining agricultural production elasticity leads to price volatility, greater than production volatility. Eventually, changes in the agricultural goods prices are higher compared to the prices of other goods and services, and price scissors are gaping, deteriorating situation of farmers. This process occurs most often during the economic downturn, while during the growth period, changes in price relations are beneficial for agriculture (Grzelak 2011). The low price elasticity of supply may also be considered as the factor increasing the risk of agricultural production, because it limits the ability to respond to price declines in agricultural commodity markets (Rembisz i Sielska 2013, p. 176). What's more, farmers are exposed to this risk to a much greater extent than representatives of other professional groups (Hamulczuk i Stańko 2008, p. 18). The conviction of the low price elasticity of the food supply expresses also A. Czyżewski (2009, p. 18) suggesting even the omission of the effect of pricing adjustments of agricultural producers in the construction of macroeconomic models. Therefore, exists a widespread consensus about the low price elasticity of the supply of agricultural products, as well as about a significant impact of this situation on the agriculture. However, it is worth looking through the proposed explanations of the low price elasticity in agriculture, brought by the researchers. In addition to the dependence of agriculture on environmental conditions, mentioned before and considered by the most of the researchers as "natural", numerous elements remaining in the causal link with the supply of agricultural products are pointed out. One of the proposed explanations is the presence of transaction costs. Because of them some farms, instead of directing their production to the market, decide to switch toward the subsistence model of agriculture, reducing the global supply (Key, Sadoulet & De Janvry 2000). Since, however, the dynamic of transaction costs is only marginally reflected in the procurement prices of agricultural products, this variable becomes less tied to the size of supply. On the other hand, Johnson[2] (1950), examining the causes

2 The author also mentions other potential causes of *a* relatively good condition of agriculture in crisis: 1) high fixed costs of agricultural production caused by the linkage of farm workers with

of significantly lower declines in production and employment in agriculture during the Great Depression in the United States, points to the important role of the low supply elasticity of production factors in agriculture. And in the context of resources, used in the agricultural production, and particularly their structures, the title problem of this research will be considered. The concept of structures, understood as "an integrated system of distinguishable yet mutually constitutive elements" situates the economic structure within the most important determinants of differences in levels of development (Blankenburg, Palma, Tregenna 2008). In the context of agriculture, structures are often limited to defining the agrarian structure[3], understood as the shape and collocation of fields, taking into account the legal and social aspects, concerning the ownership and use of land, selected sociological cultural and economic issues (Bogocz 2010, pp. 79-80). This approach limits the scope of research on agricultural production structures by omitting other important agricultural production factors, such as capital and labour. Thus, we receive a complete picture of the structure of agricultural production factors only by showing a combination of three resources and their inherent complexity. In addition, the analysis of the structures can be extended to the research on the structure of agricultural output[4]. This approach makes the study of the structures of agricultural production factors a complex and multi-dimensional issue[5]. In the context of supply elasticity, importance of production structures, identified with a combination of production factors, cannot be underestimated. According to the law of supply, production volume increases with the increase in prices. However, decision how to respond to price impulses depends on producers' will. They may pursue changes in the size of production intensively or extensively, forcing changes in productivity or volume of usage of each of the production factors - labour, capital or land.

their farms and alternative costs of land ownership; 2) a greater tendency for farmers to sell at lower prices than to a reduce production volume; 3) large share of subsistence production; 4) "technical" factors limiting agricultural production response to price impulses, mainly related to the long production cycle; 5) low level of monopolization of agricultural producers (Johnson 1950, pp. 541-547).

3 A comprehensive and multidimensional review of the agrarian structure of the Poland and European Union is made by Majchrzak (2015, pp. 101-159).

4 his approach presents A. Czyżewski and Matuszczak (2006, pp. 30-65) taking into account, besides *an* agrarian structure, the structure of employment, material resources and production.

5 An example of this multidimensionality may be the views broadening the scope of the structural analysis of agriculture, with management structures analysis and situating this area of research in the field of neo-institutional economics (B. Czyżewski 2007).

The aim of the research is to establish the extent to which changes in the structure of agricultural production factors of selected EU countries in the period 1999-2013 resulted from adjustments to pricing conditions on the markets of agricultural products and production factors. In order to achieve this goal, the volume and effectiveness elasticity of the employment of different production factors will be calculated and compared. The calculation of these indicators can also give the basis to conclude about the strength of the ties between agricultural sector and market in different countries.

2. Estimating the price elasticity of agricultural good's supply and production factor's structures

In the theory of microeconomics, supply price elasticity is defined as the ratio of the relative change of the supply of goods and the relative change in the price (Rekowski 2011, p. 74). However, while in the microeconomic approach, the operationalization of this simple concept does not cause many problems, in the context of macroeconomic research, especially those associated with a specific agricultural sector, measuring the price elasticity of supply is much more challenging. Griliches (1956) proposes a method for estimating the elasticity of supply, based on the average price elasticity of demand for production factors, weighted by their share in the total input. Nerlove (1956) indicates, however, that the results of the estimations of the supply elasticity of agricultural raw materials (equivalent in its approach to the sowing area under specified grain) may be underestimated, due to the identification predicted by farmers' price, which is the major price determinant of supply, only with the price from previous period. In the proposed method, taking into account the specific agricultural delay in decision-making, as a determinant of supply, the author included also prices from earlier periods. Nerlove's model is the basis for further research on price elasticity of supply, which is reviewed by Askari and Cummings (1977). They indicate three types of modifications made to the model. Firstly, changes were made in the model variables. And so, to determine prices there were used actual market prices, the ratio of producer prices to consumer price indices, the price scissors indicator and the relation between the prices of different agricultural products. To determine the size of the supply there were used physical sizes of production or acreage. Secondly, additional variables, significantly affecting the volume of supply, were introduced into the model. Most often they concerned weather conditions, advances in production methods, improved infrastructure and increased demand. Thirdly, the analysis was extended to permanent crops.

The approach similar to the one used in this study, was presented by Tweeten and Quance (1969, p. 350). They estimated the impact of prices of agricultural products on quantity and productivity of agricultural production factors. The article adopted the method of estimating the flexibility proposed by Koyck (after Zielinski 2002, pp. 30-35). It assumes the existence of the delays, effect of which is asymmetrically reduced in a constant proportionate manner. Under this assumption, treating time as a discrete variable, the function of agricultural products supply is represented by the following formula:

$$Y_t = a + \sum_{(i=0)}^{\infty} b_i p_{t-1} \; Y_t = a + \sum_{(i=0)}^{\infty} b_i p_{t-1} \tag{1}$$

where:
Y_t – size of supply in t period,
p_{t-1} – price relations indicator in t-1 period,
a, b_i – estimated structural parameters.

According to the assumption adopted by Koyck, a series of coefficients b_i may at some point (i.e. $i=k$) take the form of a geometric sequence with fixed quotient δ, where $0 \leq \delta < 1$. Then Y_t becomes a function of $k-1$ unweighted, delayed prices and geometrically expressed average of all other prices. For $k=0$ equation has the following formula:

$$Y_t = a + b_0 p_t + b_0 \delta p_{t-1} + b_0 \delta^2 p_{t-2} + \cdots \tag{2}$$

If the equation is delayed by one period and multiplied by δ, then it will take the form:

$$\delta Y_{t-1} = a \delta + b_0 \delta p_{t-1} + b_0 \delta^2 p_{t-2} + b_0 \delta^2 p_{t-2} + \cdots \tag{3}$$

Subtracting from the formula (3) and formula (2) we obtain the following expression:

$$Y_t = a (1 - \delta) + b_0 p_t + \delta Y_{t-1} \tag{4}$$

The parameters of that equation can be estimated on the basis of macroeconomic data, using the method of least squares. Knowing them we can calculate the value of short-term and long-term elasticity following given formulas:

$$\varepsilon_k = b_0 \frac{\overline{p}}{\overline{Y}} \tag{5}$$

$$\varepsilon_k = \frac{b_0}{1-\delta} \frac{\overline{p}}{\overline{Y}} \tag{6}$$

ε_k – short-term elasticity index,
ε_d – long-term elasticity index,
$\overline{p}$ – average price level,
$\overline{Y}$ – average size of supply.

The value of the short-term elasticity index represents the average production factor's structures elasticity in the analysed period. The long-term elasticity index shows the cumulative effect of change in value of the price scissors index. This indicator therefore recognizes the impact of changes in price scissors index in period t-2 and earlier, taking into account geometrical decrease of its relevance. The presented above method will be used to determine the elasticity of the volume of labour and capital, and the elasticity of their productivity in relation to changes in the size of the price scissors indicator. Due to the lack of annual data on the dynamics of the adjustment, the land factor has been excluded from the study. The countries selected for comparison are Poland, Hungary and Italy. The criterion for selection was a certain similarity between the agricultural sector in selected countries in structural terms[6]. The time range of research covers the years 1999-2013. The detailed specification of the data used in the study is presented in table 1.

Table 1. Variables used in the research on the price elasticity of production factor's structures

Variable	Symbol	Source	Description
agricultural goods output	Y	Eurostat[1]	The sum of crop and animal production (excluding the value of services) at basic prices (including subsidies on products and taxes), constant prices (2005=100, excluding inflation), expressed in million units of national currency

6 The selection of countries for comparison was performed using Ward's cluster analysis method with Euclidean distance. Variables used in cluster analysis are: the average size of farm, labour input in AWU per 100 ha, the cost of capital in euros per 1 ha, the cost of capital in euros per 1 AWU (data for the year 2010).

agricultural labour input	W	Eurostat[2]	The total input of human labour in the operating activities of the farm, expressed in thousands of AWU[1]
agricultural capital input	C	Eurostat[3]	The sum of total intermediate consumption and fixed capital consumption, at basic prices (including subsidies on products and taxes), constant prices (2005=100, excluding inflation), expressed in million units of national currency
price scissors for agriculture	p	Eurostat[4]	The ratio of the real price index of AGRICULTURAL GOODS OUTPUT (including fruits and vegetables) to the real price index of Input total
capital productivity	C_p	Own calculations	The ratio of agricultural capital input to agricultural goods output (C/Y)
labour productivity	W_p	Own calculations	The ratio of agricultural labour input to agricultural goods output (W/Y)

Eurostat's codes: [1]aact_eaa03 [2]aact_ali01 [3]aact_eaa03 [4]apri_pi00/05/10_outa, apri_pi00/05/10_ina

Source: own research and Kalińska i Wrzaszcz (2006, p. 11)

3. Research results

The first step in the elasticity research, in accordance with the adopted method, is the estimation of the regression equations (4). The estimation results are presented in table 2. They show a small dependency, of variables describing the production factors volume and productivity, from the price variables. In most cases, the variability was explained mostly by the values of dependent variable from the previous period. In the case of models describing the elasticity of capital volume in Poland and capital productivity in Italy and Hungary, variables introduced into the model showed such a weak relation with the dependent variable that all the regression equation turned out to be not statistically significant at α=0,05 (p value statistics greater than 0.05). The adopted method assumes a linear form of regression and to estimate it the method of least squares was used. To be able to apply it in the ordinary form it is required to meet a number of assumptions. The results of the verification of these assumptions, made using a runs test, Shapiro-Wilk test and Goldfeld-Quandt test are presented in table 3.

Table 2. The results of the estimation of regression describing the price elasticity of production factor's structures

Dependent variable		Regression equation	Multiple R^2	p
Poland	C	$C = 25522{,}87^{\alpha} + 1943{,}88p_{t-1} + 0{,}36C_{t-1}$	0,2396	0,17
	C_p	$C_p = 0{,}03 + 0{,}171p_{t-1} + 0{,}87^{\alpha}C_{pt-1}$	0,8756	$13*10^{-8}$
	W	$W = 809{,}04 - 255{,}98p_{t-1} + 0{,}73^{\alpha}W_{t-1}$	0,782	$5*10^{-6}$
	W_p	$W_p = -6261{,}1 + 8781{,}78^{\alpha}p_{t-1} + 0{,}95^{\alpha}W_{pt-1}$	0,9247	$18*10^{-8}$
Hungary	C	$C = 174224 - 23320{,}3p_{t-1} + 0{,}86^{\alpha}C_{t-1}$	0,7296	$2*10^{-4}$
	C_p	$C_p = 0{,}52 - 0{,}074p_{t-1} + 0{,}61^{\alpha}C_{pt-1}$	0,3106	0,09
	W	$W = 41{,}42 - 10{,}21p_{t-1} + 0{,}91^{\alpha}W_{t-1}$	0,9471	$5*10^{-9}$
	W_p	$W_p = 949631 - 298007p_{t-1} + 0{,}77^{\alpha}W_{pt-1}$	0,5962	0,0028
Italy	C	$C = -3265{,}98 + 3515{,}4p_{t-1} + 0{,}99^{\alpha}C_{t-1}$	0,5368	0,0067
	C*	$C^* = -1{,}036 + 5277{,}3p_{t-1} + 0{,}82^{\alpha}C^*_{t-1}$	0,9999	$1{,}8*10^{-36}$
	C_p	$C_p = 0{,}33 - 0{,}293p_{t-1} + 0{,}54C_{pt-1}$	0,2093	0,22
	W	$W = 272{,}33 - 215{,}09p_{t-1} + 0{,}93^{\alpha}W_{t-1}$	0,9549	$17*10^{-10}$
	W_p	$W_p = -11650{,}8 + 16575{,}6p_{t-1} + 0{,}86^{\alpha}W_{pt-1}$	0,8264	$11*10^{-6}$

C – capital input, C_p – capital productivity, W- labour input, W_p – labour productivity
$^{\alpha}$ parameters statistically significant at the level α=0,05

Source: own research based on Eurostat data

Due to the presence in the models delayed time variable, we resigned from the measurement of autocorrelation with Durbin-Watson test. In the case of the runs test and Goldfeld-Quandt test, rests from the models were ordered by increasing value of the variable representing the delayed value of price scissors.

Table 3. The verification of the ordinary method of least squares assumptions in the estimation of the parameters of regression equations describing the shape of the price elasticity of production factor's structures in agriculture

		randomness[1]	normal distribution[2]	homoskedasticity[3]
Critical value (a=0,05)		*[a]4-13, [b]4-12*	*0,8870*	*5,0503*
Poland	C	9[a]	0,9707	1,1377
	C_p	7[a]	0,9658	2,3828
	W	6[a]	0,9316	1,4107
	W_p	**8[a]**	0,9649	1,5461
Hungary	C	9[a]	0,9697	2,4564
	C_p	7[b]	0,9303	4,5492
	W	9[a]	0,9830	1,5669
	W_p	10[b]	0,8942	3,9866
Italy	C	11[a]	0,9649	**5,3406**
	C*	9[a]	0,9529	1,4657
	C_p	10[a]	0,9157	4,9978
	W	10[a]	0,9168	2,6933
	W_p	9[a]	0,9170	1,2737

C – capital input, C_p – capital productivity, W- labour input, W_p – labour productivity
* test results for the weighted method of least squares
[1] runs test [2] Shapiro-Wilk test [3] Goldfeld-Quandt test

Source: own research based on Eurostat data

The values of empirical tests, written in bold, refer to the regression equations in which the assumptions of ordinary method of least squares are not met. The

test results indicate no deviations from these assumptions. Only in the case of the model estimated for elasticity of the volume of capital in Italy occurred heteroskedasticity (instability of variance in the set of rests). To exclude this error we revalued the model using weighted least squares method. The results of estimating regression equation with this method were also presented in table 2 and marked with "*" sign. This model was characterized by high value of the multiple R^2. Also, the tests of the assumptions of the ordinary least squares method run for this model (table 3) did not indicate lack of their fulfilment, which justifies the use of estimated on this basis coefficients for further calculations. Low significance of the relationship between the size of the price scissor's index and the considered variables, suggests that estimated in the next phase of the research elasticity will be low. High values of δ imply high, in relation to short-term indicators, long-term elasticity. Indicators of the price elasticity of production factor's structures, estimated basing on the formulas (5) and (6) are presented in table 4. The first observation, worth mentioning, is the fact that in the all countries volume elasticity of capital and labour is lower than productivity elasticity. It means that in all surveyed countries farmers preferred "quality adjustment", understood as change in the productivity of production factors. Furthermore, in the all surveyed countries, the elasticity of labour was higher than the capital elasticity. This result may seem surprising, given the fact that this capital is widely recognized as the most mobile factor of production. But in the context of the agricultural sector of the surveyed countries it turns out to have lower elasticity than the labour factor. It is connected with the structural determinants of agricultural production, which are characteristic for agriculture of those countries. Firstly, they are characterized by relatively low average size of farms, which significantly limits their investment capabilities. Secondly, agriculture in these countries, comparing to other EU countries, is also highly labour-intensive and is based largely on the work of the farmer and his family. This gives the possibility of low-cost changes in the volume and efficiency of labour factor. By analysing differences in the general elasticity of the production factor's structures in individual countries, in the short-term, we can see that the highest was elasticity of the Italian agriculture and the lowest the Hungarian one. Also in the case of Italy, short-term indicators were the most diverse, ranging from 0.08 to 0.53, while in Hungarian agriculture they closed in the range of 0,02-0,12. Based on these observations it is possible to conclude about low sensitivity of this sector on the price impulses from the market. Between the countries, relatively high elasticity *characterizes* Italian agriculture. This fact can be partly explained by historical conditions. Collectivized before 1989 Polish and

Hungarian agriculture, still not fully adapted to market realities, while Italian agriculture, not passing in the early 90s through the transformation process, is free of this burden. However, to prove that *statement* some additional research must be conducted[7]. On the field of economics, this dependence can be explained by *a* more capital-intensive model of agricultural production in Italy[8]. In this situation, a greater importance for farmers *gains* the means of production and their prices, to which they react stronger.

Table 4. The price elasticity of production factor's structures in the Polish, Hungarian and Italian agriculture in years 1999-2013

Dependent variable	Poland		Hungary		Italy	
	short-term	long-term	short-term	long-term	short-term	long-term
C	0,04	0,07	-0,02	-0,14	-0,08*	-0,44*
C_p	0,13	0,96	-0,06	-0,17	0,22	0,46
W	-0,11	-0,41	-0,02	-0,21	-0,17	-2,58
W_p	0,33	6,19	-0,12	-0,52	0,53	3,75

C – capital input, C_p – capital productivity, W- labour input, W_p – labour productivity
* test results for the weighted method of least squares

Source: own research based on Eurostat data

In the context of Polish and Italian agriculture we should pay attention to the opposite direction of changes in the volume and productivity in the situation of gaping (worsening the ratio of the prices of goods sold and the prices of means of production) and shorting price scissors (improving the ratio between prices of goods sold and the prices of means of production). In both countries, in the

7 As Takács-György [2013, p. 355] states "Although Poland and Hungary had different historical backgrounds – mainly concerning property structure – the economic and social environment remained the same during the decade 2000-2010". In that case even despite the difference in the scope of collectivization, similar economic and social consequences of that process, justifies treating that process as a determinant of present situation in agriculture, common to all post-communist countries.

8 Interesting facts about productivity and efficiency of Italian agriculture are brought by the research of Galluzzo [2013].

situation of shorting price scissors, farmers reacted with increase in labour productivity and a decrease in the volume of labour (especially Italy in the long term). It may indicate that farmers were discounting the benefits of price conditions, investing in increased productivity, allowing to perform the same tasks with less time. In the case of gaping price scissors and the lack of investment, labour productivity falls and these drops must be offset with its higher input. In the case of volume and productivity of capital, the situation of Italy demands a special explanation. Shorting price scissors index was accompanied there by a decrease in capital input and increase in its productivity. Because of the fact that Italian agriculture, in contrast to Polish and Hungarian, was characterized during the examined period by high capital intensity, we can explain that situation, assuming that farmers were discounting the improvement of price conditions by paying off investments from previous years. And productivity growth is the natural consequence of the decline in capital input at a relatively stable level of production value. Fig. 1. presents the price adjustment in the examined countries.

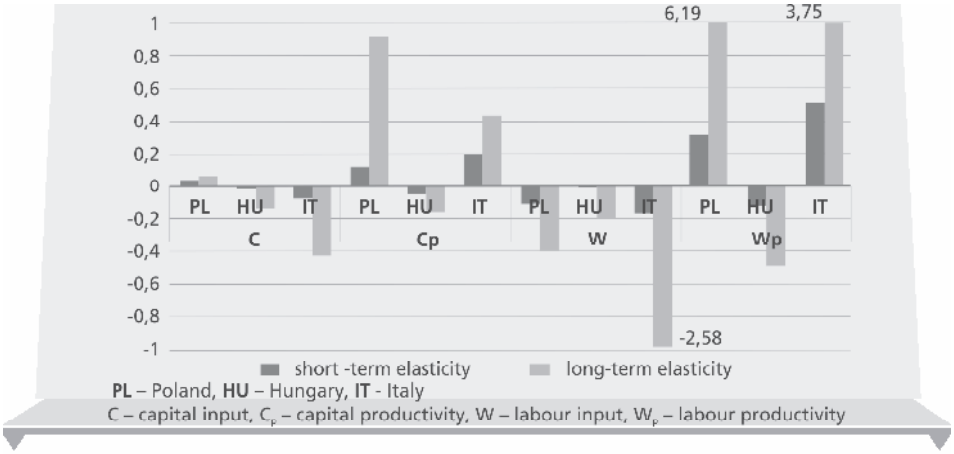

Figure 1. The price elasticity of production factors structures in the Polish, Hungarian and Italian agriculture in the situation of shorting price scissors

Source: own research based on Eurostat data

The chart shows the strength and direction of the adjustments of production factor's structures in different countries in a situation of shorting price scissors.

Gaping price scissors index causes the reaction of the same strength and opposite direction. For factors which long-term elasticity indices exceeded 1, their values are given on the chart. The agricultural sector in different economies reacts similarly only through adjustments in the volume of labour, but the strength of the adjustments varies. For all other variables tested, both the strength and direction of interaction differ a lot.

4. Conclusion

The research conducted in the paper demonstrates the low elasticity of the production factor's structures in agriculture, in conditions of changing price scissors index for Poland and countries with a similar structure of production factors - Hungary and Italy. In Hungary, general elasticity turned out to be lower than in Poland, and in Italy higher. Moreover, in the all countries volume elasticity of capital and labour is lower than productivity elasticity and in the all surveyed countries, the elasticity of labour was higher than the capital elasticity. That can be connected with a general structure of agriculture production in those countries - relatively low average size of farms and highly labour-intensive production processes. In the context of Polish and Italian agriculture an interesting issue is the opposite direction of changes in the volume and productivity. In both countries, in the situation of shorting price scissors, farmers reacted with increase in labour productivity and a decrease in the volume of labour (especially Italy in the long term). Comparing all the countries, agricultural sector in different economies reacts similarly only through adjustments in the volume of labour, but the strength of the adjustments varies. For all other variables tested, both the strength and direction of interaction differed a lot. Basing on the price elasticity indicators we can also conclude about the strength of ties between agricultural markets and producers, and about their sensitivity to impulses from the market. Such lower elasticity of the production factor's structures in Polish and Hungarian agriculture may constitute a conclusion that this sector is still significantly influenced by a system of property rights and production, from the times before the year 1989. It can be regarded as justified in this situation to conclude about occurrence of the phenomenon of "path dependency"[9].

9 "A system is *a* path dependent if initial moves in one direction elicit further moves in that same direction; in other words there are self-reinforcing mechanisms or positive feedbacks" (Kay 2004, *p.* 406).

Summary

Changes in the production factor's structures in agriculture in the light of price adjustments. A case study of selected EU countries

The conducted research concerns the issue of the impact of the prices on the volume and the productivity of labour and capital factors. The purpose of the article is to compare to what extend changes in the structures of agricultural production factors in the agriculture of selected EU countries (Poland, Hungary, Italy) in years 1999-2013 are the consequence of adaptation to price conditions on the agricultural products markets and production factors markets. The studies prove the low elasticity of production factor structures relative to the price scissors index in the all countries. However, in the case of Hungary and Poland it is particularly low, which can be connected with low capitalization of agriculture in those countries, on the one hand, and the "path dependency" effect in the context of communist past of these countries, on the other.

Keywords: *price elasticity, structures of production factors, agriculture, EU*

Streszczenie

Zmiany struktur czynników wytwórczych w rolnictwie w świetle uwarunkowań cenowych. Studium przypadku wybranych krajów UE

Przeprowadzone badania dotyczą kwestii oddziaływania cen w rolnictwie i jego otoczeniu na wykorzystywane przy produkcji rolniczej zasoby pracy i kapitału oraz ich produktywność. Celem artykułu jest porównanie w jak dużym stopniu zmiany zachodzące w strukturach wytwórczych rolnictwa wybranych państw UE (Polska, Węgry, Włochy) w latach 1999-2013 wynikały z dostosowań do cenowych uwarunkowań na rynkach produktów rolnych i czynników wytwórczych. Przeprowadzone badania dowodzą niskiej elastyczności struktur czynników wytwórczych względem wskaźnika nożyc cen we wszystkich krajach. W przypadku Węgier oraz Polski jest ona szczególnie niska, co można wiązać z jednej strony, z niską kapitalizacją sektora rolnego, z drugiej zaś z występowaniem zjawiska „zależności od ścieżki" w kontekście komunistycznej przeszłości tych krajów.

Słowa kluczowe: *elastyczność cenowa, struktury czynników wytwórczych, rolnictwo, UE*

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