Spatial Diversification of Development of the Agricultural Property Market in Poland

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Abstract The paper discusses the development of the agricultural property market in Poland, focusing mainly on identifying the geographical differences in the development of agricultural property markets in voivodships. The study included 16 objects (voivodship agricultural property markets). The temporal scope of the analysis was a decade between 2005 and 2015. The analyses examined closely the number of transactions, their value, areas sold, and the average price of 1 hectare sold by the governmental Agricultural Property Agency and privately traded. The main research hypothesis was made that agricultural property markets in better developed voivodships grow faster than in the less developed ones. The data came from the Local Data Bank of the Polish Central Statistical Office and the Institute of Agricultural and Food Economics – National Research Institute. The data analysis was conducted by means of statistical and econometric methods.

1. Introduction
The resurgence of market economy in Poland in the 1990s resulted in the increased importance of the Polish real property market, particularly of its agricultural property segment. The relevance of the agricultural property market stems from the fact that in the market economy agricultural land, apart from its production role and a vital social role as a natural good, a public good plays an economic function - as a form of investment [1]. In comparison to other types of land, agricultural land is a particular type of property because, despite its investment value, it is a produce-generating asset of certain production potential. Therefore, its attractiveness on the market is determined by several attributes that are of marginal importance in the case of other property types. These attributes include: the kind of farming land (arable land, meadows, pastures, orchards) and the quality of soil (measured by soil quality classes or in conversion units), the size and shape of the plot and its agricultural condition [2]. We must not forget about factors that affect buyers’ investment decisions. Apart from farmers who want to increase their production capacity by purchasing new land, there are other buyers who seek good investment opportunities. For many years such a situation has been seen in the vicinity of metropolitan areas where agricultural land can be used for non-agricultural projects [3].

Since the revival of the Polish real property market in the 1990s we have seen its subsequent development stages. I. – a period of adapting legal and organisational solutions to the requirements of market economy (1990–1997 - ownership transformations in 1990–1994 followed by the period [1995–1997] of creating market mechanisms, incl. market institutions which ended with adoption of the Act of
21 August 1997 on real property management). II. – a period of verifying the adopted solutions and of pre-accession actions (1998–2004). III. – a period following Poland’s accession to the EU - period of convergence with international markets (from 2005). It should be stressed that the voivodship agricultural property markets develop at different rates, which is primarily manifested by the number of concluded transactions, the size of marketed properties and, finally, the market prices of 1 hectare of agricultural land.

The above indicated implication has become a rationale for this study, the purpose of which is to identify the geographical developmental differences among real estate markets in voivodships. The subject of analysis is the agricultural land market in Poland in regional terms - 16 objects (voivodship agricultural property markets). The temporal scope of the analysis was a decade between 2005 and 2015. The analyses focused on the number of transactions, their value, areas sold, and the average price of 1 hectare sold by the governmental Agricultural Property Agency and privately traded. The main research hypothesis was made that agricultural property markets in better developed voivodships grow faster than in the less developed ones. The data came from the Local Data Bank of the Polish Central Statistical Office and the Institute of Agricultural and Food Economics – National Research Institute. The data analysis was conducted by means of statistical and econometric methods.

2. Agricultural property market in Poland – development phases

The agricultural property market has its own dynamics. It is subject to constant changes, both quantitative and qualitative, that are reflected by the number of transactions, the volume of capital flow per capita and by the structure of the ongoing processes [4]. Functioning and development of the (agricultural) property market is determined by many factors, the main ones being demographic, economic, financial, legal and political factors [5, 6]. A particular role in the growth of the Polish agricultural property market was played by political and economic factors because its post-war revival was delayed until the system transformation in the 1990s. Since 1992 the agricultural property market in Poland consists of two basic segments:

- a primary market – where land is sold by the governmental Agricultural Property Agency\(^1\) that manages the Treasury agricultural property;
- a secondary market – where land is sold by private entities and local governments.

Since the revival of the Polish real property market in the 1990s, we have seen its subsequent development stages. Different authors use their own criteria to identify these stages (Table 1):

- L. Kałkowski, when evaluating the opening balance at Poland’s accession to the European Union, refers to two time intervals (transformation period of 1990-2004 and the time following Poland’s accession);
- H. Henzel, referring to the domestic legal and economic changes, distinguishes four development stages on the Polish property market: 1989-1992, 1993-1995, 1996-1999, the time after;
- I. Foryś takes into consideration phenomena that shaped the Polish market after 1989 and distinguishes three development stages: 1990-1997, 1998-2004 and the time after 2005).

Over the last several decades the agricultural property market in Poland was shaped by several factors. Generally, the changes had their origin in:

1) a historically determined approach to land as a cultural and symbolic asset. In the past land was the most desired economic good and the most important factor of production. However, land

\(^1\) The Agricultural Property Agency was established by way of the Act of 19 October 1991 on the management of the Treasury agricultural property (Journal of Laws of 2016, item 1491 as amended). It took over 4.7m ha of agricultural land. Today its reserve contains 1.4m ha, out of which 1.02m ha have been rented and the remaining 248.2 thousand ha are waiting for disposal (www.anr.gov.pl).
ownership was associated with many other benefits, values and meanings; land determined one’s social status, gave political rights and was the source of wealth and prestige [9];

2) the legacy of the communist regime – large-scale loss-making business entities owned by the government led to a situation where the Polish farming industry was dominated by a private sector [10];

3) the system transformation, including ownership and ownership rights transformation aimed at more effective land management before Poland’s accession to the European Union [11];

4) Poland’s integration with the EU and the incorporation of the Polish agriculture into the mechanisms of the Common Agricultural Policy;

5) the increased importance of land as a multi-functional good being simultaneously a factor of production, a public asset and an environmental asset has led to a situation when the optimum use should be made of its shrinking resources in order to improve social well-being, food production cannot affect the capacity of soils and other resources to self-rehabilitate as their destruction generates costs that will be paid by the whole population;

6) financial aspects – the opportunity to obtain various benefits, such as rental fees or direct payments from the EU funds [12];

7) fiscal aspects – more advantageous tax treatment enjoyed by farmers in comparison to regular property tax rates; the exemption of income from agricultural activities from the income tax; numerous tax credits; more advantageous regulations concerning social security contributions [13, 14].

In the subsequent part of this study the findings are presented of the analyses of the agricultural property market growth in Polish regions.

### Table 1. Development stages of the Polish real property market after 1989

| Considering the opening balance at Poland’s accession to the European Union according to L. Kałkowski | Considering domestic legal and economic changes according to H. Henzel | Considering phenomena affecting Polish market after 1989 according to I. Foryś |
|---|---|---|
| a) period of transformation: 1990-1999 – a decade of systemic transformation, 2000-2004 – a period preceding Poland’s accession to the EU; b) period following Poland’s accession to the EU (from 2005 onwards). | a) stage I (1989-1992) – time of intensive work on changing legal regulations and market institutionalisation; b) stage II (1993-1995) – outflow of capital to the securities market, weakness of the money market, oversupply of industrial property, shortage of office space, inflow of foreign capital; c) stage III (1996-1999) – legislative changes, increased attractiveness of real property as capital investment; d) stage IV (from 2000 onwards) – emergence of mortgage banks and real property funds, decrease in transaction prices and rents, increased vacancy rate, process of adapting domestic property market to western markets. | a) period of adapting legal and organisational solutions to the requirements of market economy (1990–1997 - ownership transformations in 1990–1994 followed by the period [1995–1997] of creating market mechanisms, incl. market institutions which ended with adoption of the Act of 21 August 1997 on real property management); b) period of verifying the adopted solutions and of pre-accession actions (1998–2004); c) period of convergence with international markets (from 2005). |

Source: own elaboration based on (Kałkowski, 2007; Henzel, 2007; Foryś, 2011). [7, 8, 4]

3. Development of the voivodeship agricultural property markets in Poland over 2005-2015
The subject of the analysis was the agricultural land market in Poland in regional approach (16 objects) - voivodship agricultural property markets: Dolnośląskie, Kujawsko-Pomorskie, Lubelskie, Lubuskie, Łódzkie, Małopolskie, Mazowieckie, Opolskie, Podkarpackie, Podlaskie, Pomorskie, Śląskie, Świętokrzyskie, Warmińsko-Mazurskie, Wielkopolskie and Zachodniopomorskie. The temporal scope of the analysis was a decade between 2005 and 2015. The hypothesis that agricultural property markets in better developed voivodships grow faster than in the less developed ones was verified by evaluating the voivodship agricultural property markets over the period of observation, basing on five variables:

1) number of transactions per 1000 inhabitants,
2) mean value of a single transaction expressed in PLN,
3) mean area of a sold property per 1000 inhabitants expressed in ha,
4) price of 1 ha in PLN sold by the Agricultural Property Agency,
5) price of 1 ha in PLN sold on a private market.

Having obtained the values of the above variables, the voivodship agricultural property markets were rated from 1 (the strongest market) to 16 (the weakest) in five categories. In the next step, the rating results were summed up, thus forming a general listing of the voivodship agricultural property markets according to their level of development. Subsequently, the results were compared to the list of voivodships rated by their economic development on the basis of another variable, namely their average annual GDP per capita. The power of the correlation between the development of the voivodship agricultural property markets and the economic development level in voivodships was examined with the Spearman correlation coefficient. The exhaustive analyses were preceded by the characteristics of agricultural property markets in Polish voivodships.

3.1. Characteristics of the voivodship agricultural land markets
In Poland agricultural land covers 18 682 800 ha, which accounts for 59.75% of its territory. Between 2005 and 2015 this area shrank by 2.43% (465 417 ha). The highest proportion of arable land (over 60% of total area) is in the voivodships of central and eastern Poland, e.g. in Łódzkie (70.51%), Lubelskie (69.97%) or Opolskie (67.4%). The lowest proportion is recorded in the western and northern parts of Poland, in such voivodships as Lubuskie (40.37%), Zachodniopomorskie (48.81%) or Pomorskie (50.28%) (Figure 1).

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2 Taking into consideration the quality of soils, climate and hydrological conditions, the lands of the biggest potential for agricultural production are in the northern and western parts of Poland.
During the period of analysis 1,255,769 transactions in agricultural land were made in Poland. The number of transactions was growing steadily (on average by 9.2% annually) with the exception of 2008 and 2009 (the bottom of the economic crisis in the EU) when the numbers fell by 18.7% and 11.3% YOY respectively. The market recovered in 2010 and the highest growth rate (42.1%) was seen in 2013. In 2015 the number of transactions in agricultural land increased two and a half times in comparison to 2005, reaching 199,105 concluded transactions (Figure 2).
Figure 2. Agricultural land transactions in Poland over 2005-2015
Source: own study based on GUS Local Data Bank of Central Statistical Office.

When analysing the number of transactions per 1000 inhabitants, we can see the growth rate soaring from 1.7 in 2005 to 4.3 in 2015, meaning a gain of 145% (in the analysed period an annual average of the rate was 2.5). The largest numbers of transactions per 1000 inhabitants was recorded in Mazowieckie (4.1), Lubelskie (3.8), Podkarpackie (3.4) and Wielkopolskie (3.2). The fewest transactions were concluded in Lubuskie (1.2), Opolskim (1.3) and Zachodniopomorskim (1.7) (Figure 3).

Figure 3. Agricultural property transactions per 1000 inhabitants in voivodships
Source: own study based on GUS Local Data Bank of Central Statistical Office.

The total of agricultural land sold between 2005 and 2015 reached 2 066 952 ha, with the highest figures recorded in voivodships located in the formerly German areas incorporated into Poland after the Second World War (the so called Recovered Territories): Warmińsko-Mazurskie (15.96% of the total area sold), Zachodniopomorskie (9.34%) and Dolnośląskie (8.76%). The smallest area was sold in the south of Poland, e.g. in Małopolskie (1.89%) – Figure 4.
Over the decade between 2005-2015 the total value of transactions on the voivodship agricultural property markets amounted to PLN 82,988,218 thousand with Mazowieckie and Wielkopolskie accounting for the biggest part (16.34% and 11.77% respectively). The smallest share was accounted for in Świętokrzyskie (2.02%) and Lubuskie (2.97%). Figure 5.
In 2015 the value of transactions increased sixfold in comparison to 2005 from PLN 1,915,298 thousand to PLN 11,156,797 thousand. The value of transactions was growing at the average annual rate of 28.4%. The fastest rate was seen in Mazowieckie (59.84%) and Wielkopolskie (50.17%). The general value of transactions rose at the slowest rate in Lubelskie (13.95%) and Lubuskie (15.79%).

When looking at the price of 1 ha of arable land, we can see that it was growing both on the private market (the price rose by 368% from PLN 8244 in 2005 to PLN 38,579 in 2015) and when sold by the government-controlled Agricultural Property Agency (an increase by 427% from PLN 5607 in 2005 to PLN 29,546 in 2015) as shown in Figure 6.

Figure 6. Price of 1 ha in PLN of agricultural property sold over 2005-2015
Source: own study based on GUS Local Data Bank of Central Statistical Office.

The prices were rising at the highest rate in the Recovered Territories: Dolnośląskie, Warmińsko-Mazurskie and Pomorskim, while the price increase was Lubelskie and Świętokrzyskie (Figure 7).
3.2. Evaluation of development of the voivodship agricultural land markets

For the purpose of verifying the hypothesis that agricultural property markets in better developed voivodships grow faster than in the less developed ones the authors evaluated the development of voivodship property markets in the decade between 2005 and 2015 by comparing the obtained results with the data on the economic growth in these voivodships. The comparison was made by means of the ranking method and the Spearman rank correlation coefficient. The findings are shown in Table 2 and in Figure 8.

![Figure 8](image)

**Figure 8.** Ranking of voivodships by agricultural property market development and by economic development over 2005-2015

Source: own study based on GUS Local Data Bank of Central Statistical Office.

In order to investigate the power of correlation between the development of agricultural property markets in voivodships and their economic development the authors used the Spearman rank correlation coefficient:

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    r = 1 - \frac{6 \sum_{i=1}^{n} d_i^2}{n (n^2 - 1)},
\]

where:

- \( r_{1i} \) – the rank of the i-th voivodship in the first ranking (economic development),
- \( r_{2i} \) – the rank of the i-th voivodship in the second ranking (development of agricultural property market),
- \( d_i = r_{1i} - r_{2i} \),
- \( n \) – the number of voivodships.

The obtained Spearman rank correlation coefficient at \( r = 0.6324 \) proves a strong correlation between the growth of agricultural property markets in voivodships and their economic development. Three
voivodships with best-developed agricultural property markets also enjoyed the highest economic growth. However, their positions in both rankings were not the same. The Wielkopolskie Voivodship was a leader in the classification of agricultural property markets but it was the third in the ranking of best economically developed voivodships. The Mazowieckie Voivodship, where the agricultural property market was the second best, was ranked as the best in terms of economic development. The Dolnośląskie Voivodship, which was at the third position in the ranking of agricultural property markets, was the second best economically developed. Only two voivodships: Pomorskie and Podkarpackie had identical positions in both rankings – the 5th and the 15th respectively.

### Table 2. Evaluation of development of voivodeship agricultural land markets in Poland in 2005-2015

| Voivodeship        | Economic development | Development of the voivodeship agricultural property markets |
|--------------------|----------------------|-------------------------------------------------------------|
|                    | GDP per capita in PLN on average per year | 1) Number of transactions per 1000 inhabitants | Place in the ranking | 2) Average value of a single transaction in PLN | Place in the ranking | 3) Average area sold per 1000 inhabitants in ha | Place in the ranking | 4) Price of 1 ha in PLN - sale by APA | Place in the ranking | 5) Price of 1 ha in PLN - private market | Place in the ranking | FINAL PLACE IN THE RANKING |
| Mazowieckie        | 58 728.36            | 1 | 103 907 | 1 | 2.6600 | 14 | 18 530 | 6 | 21 072 | 5 | 2 |
| Dolnośląskie       | 41 190.91            | 2 | 100 229 | 2 | 5.6787 | 7 | 19 376 | 5 | 19 606 | 8 | 3 |
| Wielkopolskie      | 39 704.18            | 3 | 96 483  | 4 | 4.9106 | 10 | 22 608 | 1 | 29 743 | 1 | 1 |
| Śląskie            | 39 441.18            | 4 | 87 282 | 6 | 1.3466 | 15 | 21 404 | 4 | 20 251 | 7 | 7 |
| Pomorskie          | 36 041.36            | 5 | 100 074 | 2 | 5.3940 | 8 | 17 319 | 8 | 22 139 | 4 | 5 |
| Łódzkie            | 34 562.73            | 6 | 39 561 | 13 | 3.0264 | 13 | 18 060 | 7 | 19 290 | 9 | 11 |
| Małopolskie        | 33 133.09            | 7 | 57 008 | 10 | 1.0687 | 16 | 17 084 | 9 | 17 667 | 10 | 13 |
| Zachodniopomorskie | 31 992.00            | 8 | 89 111 | 5 | 10.2651 | 3 | 14 208 | 10 | 14 321 | 13 | 10 |
| Lubuskie           | 31 730.55            | 9 | 62 545 | 9 | 10.9762 | 2 | 11 756 | 15 | 12 099 | 15 | 14 |
| Kujawsko-Pomorskie | 30 978.91            | 10 | 71 505 | 8 | 4.9377 | 9 | 22 436 | 2 | 28 904 | 2 | 4 |
| Opolskie           | 30 589.73            | 11 | 51 053 | 11 | 7.2546 | 5 | 21 463 | 3 | 22 358 | 3 | 6 |
| Świętokrzyskie     | 28 355.18            | 12 | 26 324 | 15 | 4.3389 | 11 | 12 842 | 12 | 12 939 | 14 | 16 |
| Podlaskie          | 27 062.55            | 13 | 43 648 | 12 | 8.0394 | 4 | 11 910 | 14 | 20 680 | 6 | 9 |
| Warmińsko-Mazurskie| 26 995.45            | 14 | 81 304 | 7 | 20.8041 | 1 | 13 778 | 11 | 17 025 | 11 | 18 |
| Podkarpackie       | 26 322.55            | 15 | 22 015 | 16 | 3.0334 | 12 | 12 000 | 13 | 11 741 | 16 | 15 |
| Lubelskie          | 25 924.36            | 16 | 29 284 | 14 | 6.0122 | 6 | 10 837 | 16 | 14 329 | 12 | 12 |

APA - Agricultural Property Agency.  
Source: own study based on GUS Local Data Bank of Central Statistical Office.

### 4. Conclusions

The analysis results confirmed that in the decade of 2005-2015 there was a correlation between the development of voivodeship agricultural property markets and the economic situation in voivodships. The agricultural property markets grow at the highest rate in the best economically developed voivodships.
voivodships: Wielkopolskie, Mazowieckie (in central Poland) and in Dolnośląskie. The least-developed agricultural property markets are in the voivodships in the south-east of Poland: Świętokrzyskie, Podkarpackie, Małopolskie, Lubelskie where the economic development is poor.

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3 Excluding the Małopolskie Voivodship which was the 7th best economically developed.