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POSSIBILITIES OF CONSIDERING SOME LAND ASSESSMENT AND LAND MARKET FACTORS IN AGRICULTURAL PROPERTY EVALUATION

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MOŽNOSTI POSUDZOVANIA ÚZEMIA A TRHOVÉ ÚZEMNÉ FAKTORY PRI HODNOTENÍ POĽNOHOSPODÁRSKEHO MAJETKU

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ABSTRACT
Our research has covered, on the one hand, the analysis of land assessment system in Germany and France and, on the other hand, the market prices of land in these two countries. Design/methodology/approach – We used comparative analysis. Findings – Following the pan-European examination of land value it can be concluded that – in terms of macro-economy - a strong medium-scale farm system would lead to the optimum utilization of soil as resource. Practical implications – The examination of land assessment system has led to the conclusion that some elements of the reviewed procedures can be useful for the improvement of Hungarian and other countries land assessment system. Originality/Value – Such a comparative study has not been made yet.

KEY WORDS: *land evaluation, land value, land price, economic factors, NUTS-2*

JEL classification: **R52**

Introduction

Land assessment is typically an official procedure, in the course of which the quality characteristics of arable land is defined for the land registration of the given country. Therefore, the land assessment can have two tasks:

- natural-ecological type of assessment (in Hungary it means ranking into a quality class), and
- economic assessment (in Hungary it is the determination of golden crown value). (Naárné et al., 2016)

The assessment based on natural endowments means the classification of soils on the basis of their different *ecological qualities* according to the *potential conditions* they possess for the utilisation of the examined land in their cultivation branch. As opposed to this, the aim of economic assessment is *to define the yield* – expressed not directly in cash - *achieved on the land if it is utilised for agricultural purposes.* The land assessment system of a given country can operate efficiently if it contributes to *the development of an optimal production structure,* in other words if it helps to decide what and at what cost (e.g. soil management, melioration) is worth growing on the given land, considering the soil conditions.

Land assessment is not identical with land evaluation because the former is not made for official registration purposes. Land evaluation is made for private purposes, in order *to determine the actual market values of the land expressed in cash* (e.g. prior to a purchase and sale or mortgage transaction) or for public purposes (as the basis of tax and duty payment obligation). This does not rule out, however, the possibility of utilising land assessment data in the course of land evaluation.

Theoretical background

By examining the internationally well-known models of land evaluation, it can be concluded that they are mostly based on market factors (supply and demand prices of land on the market, degree of leasehold fee, cost of inputs, etc.). These types of general evaluation methods are as follows:

- theoretical methods based on *market price comparison*;
- methods *calculating with the capitalization of land rents; and*
- methods *based on cost and yield calculations.* (Naárné, 2006; Naárné, 2009)

These methods can also be combined with each other.

As opposed to the above, use of land assessment data raises a couple of problems.

- One of the problems is that the land assessment – which is basically an analysing work, requires thorough professional knowledge and laboratory capacities – is very *expensive* and should be the task of agronomists. Since these are public proceedings, it cannot be implemented without appropriate government funding.
- The other aspect is the reliability of information that has been collected. Should in the practice those *"expanding methods"* prevail which are based on the values of land parcels adjacent to or similar parcels being in the proximity of the land in question instead of assessing the actual land, then the professional recognition of assessment procedure will be questionable.
- Further reason for the lack of models based on international comparison can be found in the *strong national character* of land assessment systems. The comparison of systems, which have different scaling, marking and examination criteria, is almost impossible.

Our research has covered the land assessment system of Germany and France in order to explore whether some elements of their procedures could be utilised in the improvement of the Hungarian land assessment system.

Research methodology

For example, there are different methods for land assessment by production regions in **France.** Currently there are three main models; these models are used in the different zones of the country, which were defined on the basis of different climate and soil attributes. The evaluation system in *Northern France* has been developed for the mechanized, intensive field crop production systems. A couple of soil characteristics, which directly affect the plant growth or modify the farming practice, have been chosen. Each soil quality factor is paired with a certain score indicating to what degree the soil factor meets the needs of the given crop. The aggregated score value can be maximum 1000. This overall score reflects the suitability of soil factors in terms of crop production and this score determines the land assessment value. The assessment method in *Central France* has been developed for the less intensive crop production systems. The land-quality characteristics included in assessment are: the water capacity, sprouting conditions, thickness of soil layer, oxygen supply and nutrient supply. The total score can be maximum 100, and the weighting within this score is determined on the basis of the regional agricultural practice. The land assessment system applied in the *Mediterranean region* applies the following criteria and scoring system:

- Each of the main land quality features is evaluated on a 20-point scale; while
- Each of the less important features is evaluated on a 5-point scale.

The presence of some limiting factors can even result a negative score. The final land assessment score is formed by summing up the positive and negative scores of soil characteristics and the examined limiting factors. The maximum score can be 70. (Tar, 1999)

As regards Germany, soil assessment has been required by law since 1934. The current system was implemented in the 1950s and it is similar to the 100-point system developed in 1971 by Fórizsné-Máté–Stefanovics (the system has never been implemented). There is only a slight difference: the soils in Germany are classified between 7-100 points. The 100-point model area is around Magdeburg. The other end of the scale is represented by poorer soils (15-20 points), for example the sandy parcels in Brandenburg province. (Gecse, 2000)
The comparative analysis of land assessment systems applied in the examined countries can be seen on Table 1.

Table 1. Land assessment methods applied in some EU countries

COUNTRY	DIRECTION OF LAND ASSESSMENT	MAIN COMPONENT OF LAND ASSESSMENT SYSTEM
France		
Northern France	Developed for mechanized crop production systems	**1000-point system**
Central France	Developed for less intensive crop production systems	**100-point system**
Mediterraneous areas	Covers soil characteristics and limiting factors	**70-point system**
Germany	Soil classification	**7-100-point system**

Source: own edition

Regarding the market factors used for the determination of land value, the **land price** is the most significant.

In Germany, the general and special requirements of property and agricultural land evaluation are regulated in an independent act (*Bewertungsgesetz)* in order to define the property transfer (sale and purchase, gifting and inheritance) taxes and duties. (Turner et al, 2006)
The so-called operating unit value consists of economic and residential values. The economic value is the value of the given farm, which can also be determined by broken down into parts (parcels), if required.

Two values are determined on the basis of the evaluation act:

- *The market value* of the farm or an actual parcel. This value is based on market comparisons and indicates the prospective sales income in case the given property is sold in the usual business process;
- *Profitability value,* which is determined exclusively for agricultural properties worth more than EUR 10000. The method is that the net income (operational costs and other eligible cost factors deducted from the price income), which can be permanently realised by the given business unit, is multiplied by *eighteen.* (This multiplying factor can be higher in some provinces.) In practice, the value calculated this way is much lower than the actual market value. It is applied when the farm is part of a heritage and only one heir can inherit it. Coheirs, who do not inherit the farm, can receive compensation on the basis of profitability value. (Orlovits, 2008)

Regarding France, the market value has special significance, but there is a preferential assessment method in case of inheritance. The heir, who was assigned by the court to actually inherit the agricultural property, has the right to calculate a so-called *retroactive salary* (*salaire diféré*) from the market value. The regulation is based on the presumption that the sibling working full-time on the farm with their parents has practically been employed without any salaries, while the other heirs have had the chance to find full-time employment somewhere else. Therefore the arrears of wages due to the inheritor of the farm should be determined retroactively in the course of probate proceedings and this amount should be deducted from the market value of the farm. Thus a relatively small property or a long period of time spent together with parents may result that the heir of the farm has no liability to pay significant amounts to the coheirs.

In Germany the land lease is determined on the basis of market conditions in connection with the land and farm value which can be calculated by the **capitalisation of lease fees**. The authorities examine the *content of the contracts* and can object to it if the *amount of lease is disproportionate* to the quality of land parcel subject to rent or compared to the farm inventory value. (Grimm, 2010)

In France, the minimum and maximum values of benchmark land lease fees are bound to the market price of agricultural products and annually published by the authorities. The contracting parties can agree only in a fee within the lower and upper limit and they can revise the amount of the fee in every 9 years. (Kovács-Orlovits, 2015)

Research results and findings. Review of economic factors affecting the market price of arable land

Hereinafter the key factors affecting the price of land are examined in two countries of the European Union, namely France and Germany. The common feature of these countries is that they have considerable domestic markets for agricultural and food products, because their combined population is more than 145 million, which is

almost 30% of the total population of the European Union. Due to their large territory, both countries possess significant areas used for agricultural purposes, even in European terms. According to the data of Eurostat for 2013, France cultivated about 27,7 million hectare, while Germany used 16,7 million hectares for agricultural production. The total area of agricultural land in the EU is 174 million hectares. While Hungary uses only 2,6%, that is 4,6 million hectares of the total agricultural land within EU, France has 16% and Germany has 10% of the total EU land assets. The economic and lobby force of French agricultural enterprises can further increase within the EU and it may approach 18% following the probable withdrawal of the United Kingdom from the European Union. Table 2 exemplifies the distribution of arable land in regard to France, Germany and the European Union.

Table 2. Distribution of arable land in France, Germany and accross the EU (2013)

	Total area	Area under agricultural cultivation (thou ha)						
	(thou hectare)	total	plough	pasture	olive plantation	grape	orchard	other
France	55 170	27 739	18 466	8 242	13	794	182	42
Germany	35 711	16 700	11 876	4 621	0	99	63	40
European Union*	437 847	174 238	104 115	59 564	4 156	2 910	2 465	1 028
	Cultivated	Composition according to branch of cultivation (%)						
	area (%)	total	plough	pasture	olive plantation	grape	orchard	other
France	50,3	100,0	66,6	29,7	0,05	2,9	0,7	0,2
Germany	46,8	100,0	71,1	27,7	-	0,6	0,4	0,2
European Union*	39,8	100,0	59,7	34,2	2,4	1,7	1,4	0,6
**Total agricultural area without the agricultural land of the two Mediterranean islands (Malta és Cyprus) l*								

Source: Eurostat (2016)

It is clear that the ploughland is the most important branch of cultivation in case of both countries, just like across the EU. Ploughland makes up 67-71% of the total cultivated areas in France and Germany which refers to the fact that the relative weight of field crop production branch within the agricultural sector is above the EU average in these countries. On the top of that, the proportion of land areas functioning as pastures is behind the European average of 34,2% in both countries. In terms of other cultivation branches, only the vineyards can be mentioned in regards to one of the two countries: France gives almost 30% of the grape and wine production of EU. Olive plantations are more important than vineyards in Europe. Olive production is concentrated in four countries (Spain, Italy, Greece and – to a lesser extent – Portugal) almost exclusively. The role of Spain and Italy is outstanding in olive production and vine production, as well as orchards and vegetable gardening.

The average price level of land is examined without dividing it into cultivation branches, therefore the regional differences and dispersion of average prices – which are typical in the NUTS-2 European statistical regions – are basically determined by the value of ploughland.

There is significant price difference between France and Germany in addition to the regional discrepancies within the countries. The average price in Germany was 19,754 euro, while in France it was 7,731 euro per hectare in 2014. In general it can be observed that the price of land is the highest in the economic centre regions. The highes land prices in Germany can be seen in Bavaria and North Rhine Westphalia. The prices were slightly above 40,000 EUR/ha in 2014. The former East German provinces (e.g. Saxony-Anhalt, Thuringia, Brandenburg) are still significantly far behind the price level of West German regions. Thuringia is the only German federal province where the the average market price of land was below 10,000 EUR/ha in 2014. It is interesting that the semi-peripheric zone between the two central regions of the German economy can also be observed on the map about the land prices; the prices in the zone between North-West part and Bavaria are between 10,000-15,000 EUR/ha. Figure 1 illustrates the average market value of land by NUTS-2 regions in France and Germany.

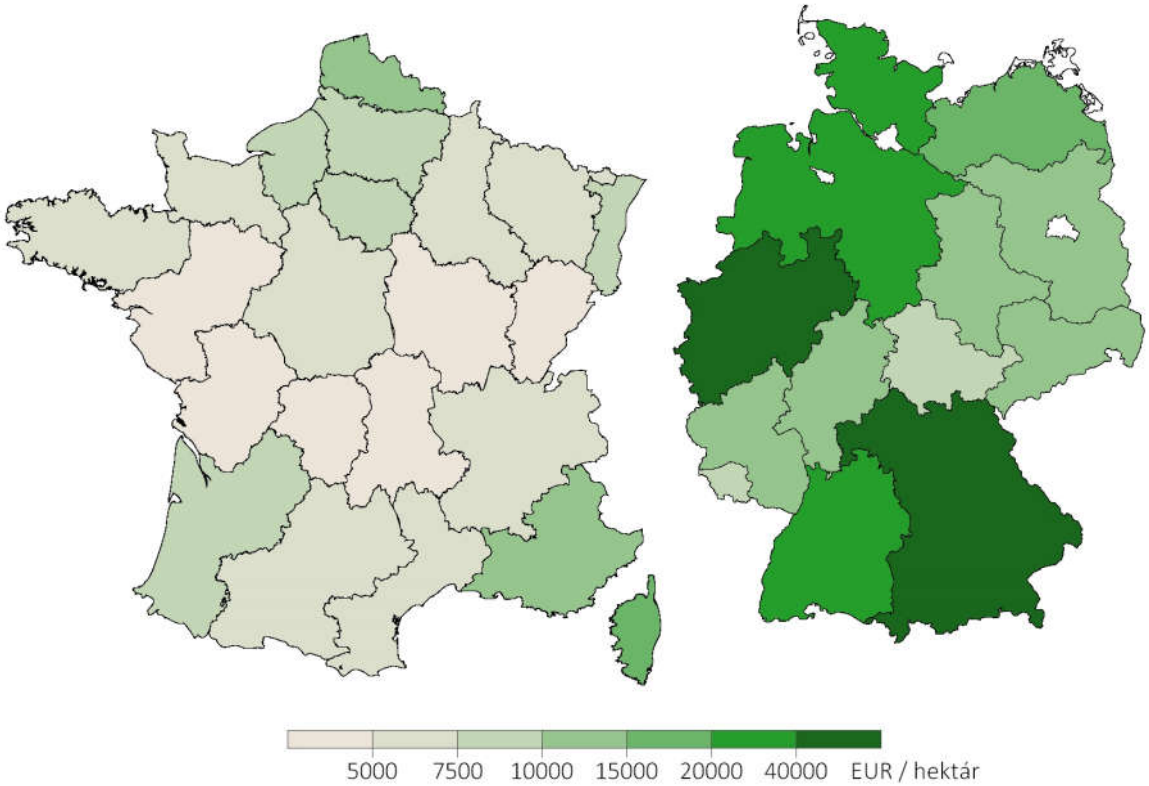

Figure 1. Average market value of land according to NUTS-2 regions in France and Germany (2014)
Source: own edition on the basis of Safer-SSP-Terres d'Europe (2015), Statistiches Bundesamt Deutschland (2015), Bodenverwertungs- und verwaltungs GmbH (2015)

As regards France, the land prices are higher than the national average around Paris, in the Ile-de-France region; North of Paris up to Calais; in the region of Alsace Lorraine around the German border; and in the South-Eastern Mediterranean coast, in Provence – Cote d'Azur province. The typical land price is 8-13 thousand euro per hectare in these regions. The highest price level within France could be seen in Corsica, where the average price per hectare was 17,900 euro.

The land prices in the inner areas of France – apart from the central region of Paris - are low compared to European prices. In the regions of Franche-Comte, Bourgogne and Limousin, the value of land is around 3,000-4,000 EUR/hectare, which basically corresponds to the level of domestic land prices.

The value of land in France and Germany shows significant correlation with the price levels of 2014 as well as with the agricultural sector specific and general economic indicators of Eurostat for 2013.

It could be observed in the German and French NUTS-2 regions that the prices are considerably lower in those provinces where the ratio of land cultivated by tenants/lessees is high within the total area of land utilised for agricultural purposes. There is higher demand to buy land in those areas where the economic significance of leasehold is smaller, the farmers use their own land, thus the farmers can increase the size of their farms mostly by purchasing land. As opposed to this, in those regions where the lease market is lively, the land sales intensity is smaller and typically the prices are lower, too.

The overall European analysis of land value reveals that a strong medium-scale farm system would lead to the most optimum utilization of land as a resource.[1] The excessively fragmented, small-scale farms are disadvantageous in terms of cultivation technology and in this case the economies of scale – resulted by the mechanical technologies – do not prevail properly either. On the other hand, the large-scale farm system, the excessively high ratio of farms above 100 hectares reduces the interest in land at regional level; thus the land prices decline, too. The lower price level will lead to the dominance of those agricultural branches which produce lower values per hectare (crop cultures of low income intensity within field crop production). The role of livestock production and horticulture, which are able to produce higher income per unit area, will remain insignificant in those regions dominated by large-scale farms. Figure 2 exempflies the regional correlations between land prices and some economic indicators.

Based on our calculations the land prices are typically higher in those provinces of Germany where the share of farms with more than 100 hectare areas is maximum 25-35% from the total agricultural area. As regards the internal areas of low price level in France, the large-scale farms with more than 100 hectares occupy 70-80% of the total arable land. East Germany, however, is somewhat an exception to this rule, because the presence of large-scale farming is the heritage of collectivization from the socialist regime. The prices in this region are high compared to some areas of France, but eventually the high ratio of large-scale farms can hinder the convergence or East German prices towards the price level which can be observed in the Western part of Germany.

Conclusions

Our research has covered, on the one hand, the analysis of land assessment system in Germany and France and, on the other hand, the market prices of land in these two countries. The examination of land assessment system has led to the conclusion that some elements of the reviewed procedures can be useful for the improvement of Hungarian land assessment system.
The research of the land price and the economic factors influencing it has revealed that only 2,6% of the total agricultural areas of the European Union can be found in Hungary, while France has 16% and Germany has 10% of the total arable land assets of the EU. Following the withdrawal of the United Kingdom from the European Union, the significance of arable land in France can further increase within the EU. In addition to the regional differences within the countries, there is a considerable price difference between France and Germany. In case of both countries, however, the most important cultivation branch is the ploughland; just like everywhere in the EU.
It can be observed in the German and French NUTS-2 regions that in those provinces where the ratio of areas managed by tenants/lessees is high within the total area utilised for agricultural purposes, the prices are significantly lower,
Following the pan-European examination of land value it can be concluded that – in terms of macro-economy - a strong medium-scale farm system would lead to the optimum utilization of soil as resource.

References

[1] Fórizsné – Máté F. – Stefanovits P. (1971): Talajbonitáció – földértékelés. – *Az MTA Agrártudományi Osztályának Közleményei 30.* (3) 359-378.p.
[2] Gecse M. (2000): Hogyan alakul a földpiac ma Magyarországon? *Agronapló*, IV. pp. 20-21.
[3] Grimm, Ch. (2010): *Agrarrecht München*, C.H.Beck Verlag 335p.
[4] Káposzta J. (2016): Regionális összefüggések a vidékgazdaság fejlesztésében. Studia Mundi - Economica 3:(1) p 55.
[5] Orlovits Zs. – Kovács L. (2015): A mezőgazdasági üzemszabályozás adaptációs lehetőségei nyugat-európai modellek alapján. *Gazdálkodás*, 59. évf. 2. sz. 127-141.pp. ISSN 0039 0690
[6] Naárné T. Zs. (2006): A földértékelés gyakorlata az Európai Unióban. *Gazdálkodás* 50:(16) pp. 114-118.,
[7] Naárné T. Zs. (2009): *A termőföld közgazdasági értéke és piaci ára.* Budapest, Agroinform Kiadó. 186 p.
[8] Zs. Tóth-Naár – M. Molnár – T. Naár - S Vinogradov (2016): *Capitalization of direct payments into agricultural land prices and land rents in Hungary.* In: Gyenge Balázs, Kozma Tímea (szerk.). Challenges in Process Management: Decision points, network systems and strategies in practice. 152 p. Gyöngyös: Károly Róbert Kutató-Oktató Közhasznú Nonprofit Kft., 2016. pp. 140-148. ISBN: 978-963-9941-95-3

[1] In our country, the agriculture is mainly built on private property and mixed-mode system (Káposzta, 2016).

[9] Orlovits Zs. (2008): A mezőgazdasági üzem fogalmának agrárjogi értelmezése. *Gazdálkodás*, 52. évf. 4. sz. 368-374.pp.
[10] Tar F. (1999): *Termőföldértékelés az Európai Unióban.* In: Michéli – Stevanovits (szerk.): A talajminőségre épített EU-konform földértékelés elvi alapjai és bevezetésének gyakorlati lehetősége. Budapest: Agroinform Kiadó, pp. 19-42.
[11] Turner, G. – Böttger, U. – Wölfle, A. (2006): *Agrarrecht Frankfurt am Main*, DLG-Verlag 346p.

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