

THESES OF DOCTORAL (PhD) DISSERTATION

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INVESTIGATIONS OF FACTORS AFFECTING LAND AND FARM STRUCTURE IN THE WEST-TRANSDANUBIAN REGION

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1. INTRODUCTION, OBJECTIVES OF RESEARCH

Agricultural land ownership, land use and land market are continuously in the spotlight of social, economical, legal and political decisions throughout the world. Land issues – as one of the many important factors – influences and determines the development and competitiveness of the agricultural sector in Hungary on the long term, both regarding the EU and the world market.

The issues of land and farm structure are especially important areas of the agricultural sector, as private land ownership does not guarantee an effective and internationally competitive farm structure. Agricultural policy and as its part, land structure policy should define the streamlines of development, and create transparent situation both in case of land ownership and land use. This factor could be decisive not only considering the competition on the market, but also regarding rural development and our EU membership.

After the system transformation an unclear and untreatable land ownership structure has been created in Hungary, due to the compensation law, the improperly established privatisation and the inconsequent approach from the government. Besides the diverse structure of land ownership a more rational form of land-use has also been formed. At the same time with one and a half decades after the system transformation the structure of farms still show a bipolar nature. Besides the high number of private small-scale production units a – small in number – group of economic organisations became more important considering the high share from arable land and production.

A series of political and professional decisions are needed to create a farm structure and farm size that serves the maintenance of market positions and competitiveness of the Hungarian agriculture on the long term; these decisions should fully consider economic rationality.

The primer and the most important **objectives** of the dissertation are as follows:

- On basis of comprehensive research to reveal and understand the land structure and the wide range of factors affecting farms structure, the affect mechanism of these factors and organise the factors into a system; to introduce and analyse the current domestic and international situation and tendencies.
- As the results of the own investigations to give a comprehensive analysis of the economic- and farm structure, the changes of land use in the West-

Transdanubian Region (Győr-Moson-Sopron, Vas and Zala County); on basis of questionnaire results to understand, evaluate and classify private farms.

- To investigate the main factors affecting land- and farm structure with entrepreneurial reaction-analysis, to define the possible region-specific characteristics.
- With the conclusions drawn from all the above-defined investigations to support the investigations carried out in other areas/regions, and provide a guideline for the objective- and measurement system of the national regulation.

On basis of the above-described the **objectives** could be **divided** and the **hypotheses** of the sub-objectives could be defined as follows:

1. It is assumed that changes in land structure – even if with a certain delay – follow a similar process that took place in the member states of the European Union in the past decades. Therefore the investigations of changes in number of farms, average size of farms, land usage and operational forms in the EU are needed. The existence and further improvement of concentration processes are expected, due to the requirements of improving efficiency.
2. The objective of research of the Hungarian farm structure in the past one and half decades is the investigations of changes in land structure, and the definition of the tendencies of these changes. Land concentration, and the further separation of land ownership and land use are assumed.
3. In order to facilitate investigations the formation of categories of economic units on basis of land size or economic indices are needed, and also the investigation of possibilities of classification based on EU norms and regulations is required. It is questioned whether the typology used in Hungary is compatible with the methodology used in the EU, and the level of adoption is adequate or not.
4. In order to achieve the expected results it is necessary to investigate the following items in the West-Transdanubian region:
 - Investigations of agricultural production units concerning the forms of operation and the share of operational forms;
 - Analysis of farms regarding production types (plant production, animal keeping and mixed type) and operational profile (full time, part time) and the share of farms concerning the operational profile;
 - Investigation of farm structure in the region, research of factors affecting the share of rented and own land.

2. MATERIAL AND METHOD

The chapter dealing with the process and evaluation of **bibliographical references** includes the most important national and international publications regarding the role and importance of agricultural land, the economical evaluation of land, land registry, objectives of land policy and land market processes. Although the West-Transdanubian Region is in the focus of the dissertation, the investigations of land and farm structure in the region are only possible with the evaluative introduction of land structure characteristics of Hungary and the European Union.

Statistical data for Hungary originate from the data bases and reports of the Hungarian Central Statistical Office (HCSO), the Agricultural Economics Research Institute and the Ministry of Agriculture and Rural Development (MoARD). EU statistics originate from different publications of EUROSTAT and publications issues by the agricultural ministries of certain member states.

Own investigations can be divided into three main parts: The starting two research units are based on secondary data collection, the third part is based in primary data collection methods.

The **first part** of the own investigations is based on data collected and processed by the HCSO, using the data base of the General Agricultural Census (GAC 2000) and the concise data base of the Farm Structure Survey (FSS) in 2003. These information bases facilitate the definition of role that the West-Transdanubian Region plays in the agricultural sector, and to support the changes of land use and farming structure of the economic organisations and private farms in the region with statistical indices.

The **second unit** is based on data provided by county offices of MoARD of Győr-Moson-Sopron, Vas and Zala Counties. Registered farming units (economic organisations, private farms), actually cultivating the agriculture land are included in the data base of the county offices of MoARD. On basis of county and regional information it can be illustrated that which entrepreneurial forms, in what share are operating in the covered region, and also the average size of land use per legal entity can be defined.

The **third part** includes the results of a questionnaire survey; primer data collection is based on personal interviews and mailed questionnaires. During the primer data collection – the elaboration of questionnaires – both qualitative and

quantitative methods has been applied. The main private entrepreneurial forms (primary producer, private entrepreneur, family farm) were included into the survey.

- The **first questionnaire survey** primarily included personal interviews in 2002; this research formed an integral part of a Hungarian Scientific Research Fund (OTKA) research of the Research Institute of Economics of the Hungarian Academy of Science. Data has been collected from Győr-Moson-Sopron County. Collected data are suitable to investigate the characteristics of land ownership/land use and certain features of farming units.
- The **second questionnaire** survey covered the area of the whole region in 2004, as an integral part of the OTKA-research* carried out by the Institute of Economics of the University of West Hungary Faculty of Agricultural and Food Sciences. In the survey – among other factors – the factors affecting land and farm structure, and the characteristics of these factors have been asked in the form of reaction investigations of the farmers.

For both surveys the data basis of the county offices of MoARD has been used, including private farms operating on more than 1 hectare agricultural land (according to EU typology). The 1 hectare limit guarantees a minimum size for economic consideration, but this limit is more a statistical approach to the economical one. Private farms are the optimal forms of farming to investigate land ownership and land use characteristics. On one hand land ownership and land rent – the land use – are easier to investigate within this entrepreneurial form, on the other hand territorial spreads (location of farm on the area of different settlements, micro regions or counties) – that might distort comparability of regions – are less characteristic to these farming forms. Statistical sampling has been carried out with the method of proportional sampling, but as only several interviewed clients have answered the questionnaire, sampling cannot be considered as randomized sampling process. Evaluation of data has been carried out with comparing statistical methods. Data have been processed and tables have been created with MS Office Excel 2002, on regional and county level, according to farming-operational forms and size of farms.

* Investigating relations of farm size measurement and comparison on territorial as well as SGM basis, in the West-Transdanubian Region (T 048960)

3. RESULTS, CONCLUSIONS

On basis of bibliographical references it can be concluded that government initiatives and decisions are needed to accomplish farm policy objectives, to the formation of suitable farm size and structure. Only after policy decisions viable and competitive farming units can be dominative in the agricultural sector.

During the investigations the deficiencies of **land rent regulation** have been defined; these imperfections can be treated with the following legal measurements (modifications):

- Consideration of interest of both land owner and renter in order to avoid the formation of a dual land market;
- The owner should have freedom to decide to whom he wishes to let the rent; with this the demand for a “careful” renter could be guaranteed. This system should be applied instead of the present obligatory order of renting rights;
- In order to guarantee the effective farming of the renter a minimum period of land rent should be defined: also considering the rights of the owner who leases the land – and preventing the dual land market –, a 3-5 years period seems to be a logical compromise;
- The tax-free nature of land rent contracts should be enlarged to 8-10 years from the present 5 years; with this measurement renting period would be longer in an indirect way, helping the operation of farming units in the field of tender applications and credit requirements;
- A slight increase of the maximum renting period to 25-30 years and the motivation of application of longer renting periods would improve the safety of farming, with the favourable and long-term renting legal framework in the background;
- Maximum renting fee should be defined on regional basis. This measurement is especially important in border regions – like in the West-Transdanubian Region.

The negative elements of **land ownership structure** could only be eliminated with a land use policy based on professional approaches and consensus. In order to avoid further fragmentation the regulation of succession law, the definition of preference system of land sales and the accomplishment of field-forming processes are timely. In order to achieve this:

- In case of inheriting instead of the present tendency of having “one inheritor” it should be urged that the division of the farm should not endanger the borders of viability, the size of farm should not go under the size of a prosperous operation;

- Inheritors being left out should be compensated; in this process the role of the state is inevitable (e.g. in forms of favourable credits);
- In case of land sales the pre-purchase right of the – possibly educated and full-time – neighbouring farmer should be emphasized, similar to the rights of the farms under the border of viability or to the rights of the farms that are slightly above the viable size;
- Volunteer field changes are not enough to avoid land-fragmentation or to reach the suitable field sizes; land consolidation is necessary and it should be volunteer but coordinated. In this process the state should play an important role in the field of professional support and covering additional costs;
- In order to achieve most objectives of farm policy the involvement of the National Land Found is recommended; this institute should play a kind of “land bank” role and could serve as the basic pillar of settlement management and development, but also in the field of farm regulation.

In most EU member states the approach of putting the **farming unit** (as economic unit) **into the focus of regulation** has long traditions. In the frame of our obligations as an EU member state the only legal way to regulate farming (land use) structure is the regulation of the farming units.

In the regulation of land ownership and land use the regulation of farming units should be put into the focus, as it already exists in the case of family farms. Types of land use should be unified on territorial basis, so the size of land used by one person or farm could be controlled. The whole of land area use of the different land use categories should be considered in order to avoid monopolistic situations of both private farms and economic organisations in the border areas of the settlements.

In order to weaken the bipolar nature of farming unit structure – and also considering the population-maintaining ability of rural areas – the formation and development of **middle-sized farming units** (independently from the operational form) should be preferred. Considering FADN results and criteria of vitality, and depending on the production type this means that farms with minimum 20 hectares, or even above 50 hectares should dominate.

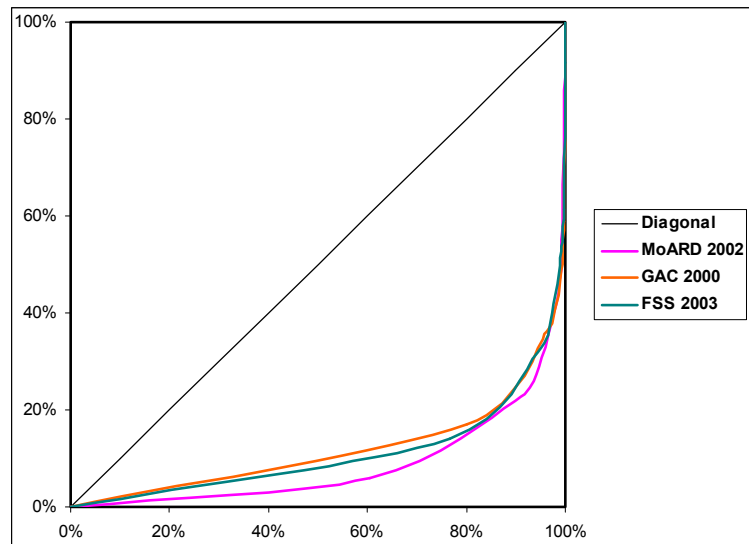
Concentration processes of farming units that is characteristic to the EU and also in Hungary is not enough to improve competitiveness. The key for the future lays in **co-operation**, both in case of private and joint operations. One condition for the formation of a competitive land- and farming unit structure is the development of farming-operational forms based on collaboration (Producers’ Organisations, common purchase and sales organisations). Besides the development of horizontal

co-operational forms the increasing role of vertical integration forms is also required.

The **results of the investigations** based on primer and secondary data collection and focusing on the land use and farm structure in the West-Transdanubian Region are the followings:

1. On basis of **statistical data** from 2000-2003 it can be concluded that at the same time both concentration and deconcentration processes are characteristic to the farming units operation in the region. While the number of private farms is decreasing and the average size of farm is increasing, the number of economic organisations is increasing and their relative area is decreasing. Investigating the two types of farming units it can be stated that the previously significant bipolar nature seems to weaken. It is an unfavourable phenomenon that besides small-sized farming units (based on economic criteria, under 2 EUME), the majority of economic organisations – in spite of the relatively large land size – can only be classified as middle-size (4-40 EUME) farming unit, considering the economic classification system.
2. Evaluation based on the **data base of MoARD offices** highlighted the factors affecting the differences between the farming forms in the region, the historical specialities of certain territorial units, environmental conditions and settlement-structural characteristics. In 2002 private farms – operating in more than 1 hectare – approached the average size of 20 hectares, operating on the edge of vitality. Economic organisations cultivated more than 700 hectares of land on the average; however, their size is considerably affected by their share from the forest areas.

On basis of the concentration analysis it can be concluded that a high rate of concentration is characteristic to the farming units ($K_e=0,812$). Private farms are more, and economic organisations are less concentrated in the region than the national average. Calculating from the data basis of the GAC of year 2000 ($K_e=0,743$) and FSS of 2003 ($K_e=0,762$) covering the total area of the country, considering the total number of farming units in the country – despite of the growing tendency – the concentration index is slightly smaller than the regional value. The graphical presentation of the concentration level is facilitated by the Lorenz-curve, where the level of concentration is illustrated by the distance from the diagonal.



Lorenz-curves of farms (MoARD 2002, GAC 2000, FSS 2003)

Source: Own calculation based on MoARD offices and TAKÁCS (2005)

3. The **first survey** covered the area of **Győr-Moson-Sopron County** that plays a significant role in the region's agriculture. On basis of the results it can be stated farms with more than 1 hectare of land operated on 30 hectares on the average; this size was higher than what one could expect from the statistics. The share of land rent of 36% and also the average size of land rent (30 ha) are favourable, considering the fact that mainly larger size private entrepreneurs and family farms use land-rent. The number of fields and the distances are on an acceptable level, and also the larger relative farm size does not result an extremely high number of fields.
4. On basis of the sample of the **second survey** it can be concluded that data of **Győr-Moson-Sopron County** two years after the first survey show concentration processes. The effect of decrease in number – that is known from the statistics – is shown in the average sizes: the relative farm size more, than doubled and the average land rent increased by 1,5 times. The number of farming units using rented land increased considerably, having an effect on the land use type as well. More than half of the cultivated land is rented in the county, even in the case of private farmers. Regarding production forms the number of farms with mixed production structure – although the majority still belongs to that group – decreased. The signs of increasing importance of specialized farms can already be detected.

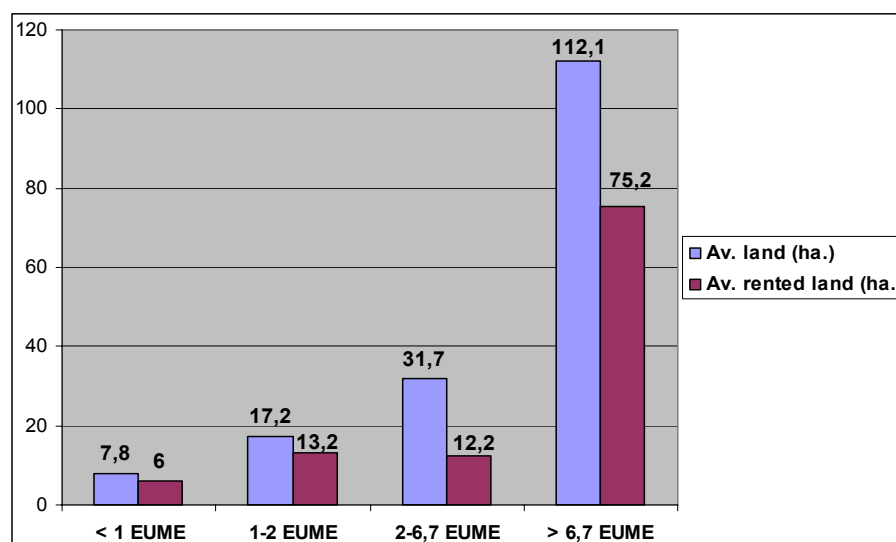
5. Evaluating the results of the **second survey** sample it can be concluded that the relative size of private farms is 65 hectares, while land-rent takes 47 hectares in the **West-Transdanubian Region**, and three farming units from the four use rented land. Considering land use types the “contribution in kind” land rent could not become definitive in the region. The share of own land and rented land is app. equal from the total area. When production type is investigated, plant production farming units are leading, and considering operational profile full time farming units are in majority.
- 5.1. After investigating several characteristics of the private farming units in the region and based on **territory classification**, 7 categories with different class interval can be defined. The 7 groups facilitate a well-established classification – based on territory characteristics – of the operations that can be considered as farming units.

Share of farms by land size categories, 2004

HECTARE	SHARE OF FARMS (%)	LAND AREA (HA)	SHARE OF LAND AREA (%)	AV. LAND (HA)	STANDARD DEVIATION OF DATA	COEFFICIENT OF VARIATION (CV, %)
1-5	6,5	14,9	0,2	2,1	1,3	61,0
5,1-10	15,0	123,07	1,8	8,8	1,75	20,0
10,1-20	13,1	216,7	3,1	15,5	3,13	20,2
20,1-50	29,0	1 058,76	15,3	34,2	8,04	23,6
50,1-100	17,8	1 242,7	18,0	65,4	13,31	20,3
100,1-200	9,3	1 623,9	23,5	162,4	37,79	23,3
200,1 <	9,3	2 626,6	38,1	262,7	49,25	18,8
Total	100	6 906,63	100	64,5	-	-

Source: Own research

- 5.2. On basis of **group-formation according to economic size of units**, almost half of private farms can be classified as a vital operation (>6,7 EUME). It can also be concluded that – investigating the average size of farming units based on economic categories – larger size categories are accompanied by relatively larger land areas. To summarize, regarding private farms those family farms of the region seem to be competitive in the future that operate on more than 100 hectares of land.



Average size of land and rented land of the farms by ESU-categories (ha.), 2004

Source: Own research

- 5.3. On basis of reaction-investigation of private farms the **factors** of lack of capital and the influencing role of agricultural markets **affecting land- and farm structure** seem to be definitive. Ten influencing factors have been defined based on former comprehensive professional investigations; more or less all these factors affect the formation of land structure and the improvement of the farm structure. On basis of the evaluation of data the ten factors can be divided into three clusters, considering the total score, the group average and the coefficient of variation.

Characteristics of influencing factors, on basis of farmers' evaluation

	A	B	C	D	E	F	G	H	I	J
Total score	678	630	657	889	661	711	675	690	885	500
Mean	6,4	5,9	6,4	8,5	6,4	6,8	6,4	6,5	8,4	4,9
Standard deviation (SD)	2,97	2,61	2,52	2,22	2,93	2,81	3,05	2,72	2,4	2,63
Coefficient of variation (CV, %)	46,4	43,9	39,5	26	46,1	41,4	47,9	41,7	28,4	53,6

Source: Own resource

Besides these the three factors of agricultural supports-land policy-land market can play a decisive role. The 5 most important factors are:

- Lack of capital
- Legal regulatory and motivating measures (agricultural supports)
- Land policy
- Land market
- Agricultural product markets

Factors specific to the region are (especially in border areas) the presence of foreigners using land, mainly on the land rent market.

The majority of the above-defined factors can be influenced with decisions; therefore the formation of a competitive farming structure in the Hungarian agricultural sector is mainly dependant on the priorities of (agricultural) policy.

Several objectives have been defined at the beginning of the doctoral work; the dissertation gives the following **answers to the research hypotheses**:

- Both concerning the number of farming units and the relative size of farms concentration processes take place in the European Union. While small-scale farming units have gone out from production to the market, larger farming units – mainly above 20 hectares – managed to increase both the size of farm and employment, and also a considerable improvement of efficiency is experienced.
- Similar processes are characteristic to the Hungarian agricultural sector. The significant separation of land ownership and land use is the consequence of the former historical situation and the social-economical system transformation. At the same time land concentration and the division of land ownership and land use characterize the land use structure in Hungary.
- The adoption of the Hungarian typological system has taken place; the investigations of economic farming unit size are already in progress in Hungary. However, two deficiencies should be mentioned:
 - a. In harmony with EU norms – and similar to the land use registrations – the statistical size limits of farms should be enlarged to 1 hectare, and
 - b. In comparing farm sizes the size of agricultural land should be emphasized more.

4. NEW AND NOVEL RESEARCH RESULTS

1. **On basis of the questionnaire survey – regarding natural (area-based) and economic parameters – almost half of the private farms of the region and nearly all family farms could be put into the category of viable farming units.** The average size of farms above 6,7 EUME is above 100 hectares; therefore it can be concluded that larger economic sizes are accompanied by relatively larger land sizes.
2. **The dissertation – considering professional viewpoints and also the characteristics of farming units – ensures a well-established land size-based category formation in order to group the private farms of the region, to facilitate the categorisation of farming units producing for the market.** The established 7 categories with different class interval ensure a reliable division of farming units from 5 hectares above.
3. **The ten factors affecting land- and farm structure can be divided into three clusters, on basis of reaction-investigations of the private farmers. Factors having the most significant effects are the lack of capital and agricultural product market.** Also the group of **supports-farm policy-land markets** from the 10 factors investigated in the dissertation could have a considerable influence on land- and farm structure. That means 5 factors play the most significant forming role. The existence of foreign land-owners – mainly on the rent market – is a region-specific issue.
4. **Former statistics defined concentration processes of private farms using agricultural land; primer investigations carried out in Győr-Moson-Sopron County and indirectly in West-Transdanubia also support this statement.**
5. **The dissertation gives recommendations to legal modifications that the state should undertake to regulate land ownership and land rent.** Recommendations urge that through farm policy objectives the formation of a suitable farm size and structure, and as a result, viable and competitive farming units should be dominative.

5. LIST OF PUBLICATIONS IN THE TOPIC OF THE DISSERTATION

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