UNIVERSITY OF DEBRECEN

CENTRE OF AGRICULTURAL SCIENCES

FACULTY OF AGRICULTURAL ECONOMICS AND RURAL DEVELOPMENT

DEPARTMENT OF FARM BUSINESS MANAGEMENT

DOCTORAL SCHOOL OF INTERDISCIPLINARY SOCIAL AND AGRICULTURAL SCIENCES

Director: **Prof. Gábor Szabó, DSc**

Ph.D. Thesis

ENTERPRISE ORGANISATION AND PROPERTY VALUATION ON DAIRY FARMS IN EASTERN HUNGARY

Submitted by:

József Horváth

agricultural economist

Supervisor:

Prof. Zsolt Nemessályi, CSc

DEBRECEN

2005

INTRODUCTION, AIMS

One of the vital issues of the competitiveness of the agricultural branches is the enterprise organization, which means to select the proper enterprise form, to establish the quantity and quality of resources, the optimal enterprise size and the harmonised production structure. After the change of regime, farmers headed a new situation. The enterprise organization has become more and more important in Hungary since the beginning of the 1990's. One of the most significant fields of Hungary's EU accession is the agriculture. Under extremely favourable natural conditions and at the same time within a disadvantageous economic sphere in comparison with the farmers in Western Europe, Hungarian farmers have to cope with much smaller amount of subsidies, though this situation will be expectedly improved.

These changes have been affecting the enterprise organization. The main challenge after the change of regime was the formation of new enterprise forms and sizes. At present, one of the most important farming issues is how enterprises should be organized in order to realise the most effective production as a member state in the European Union. The adaptation of the acquis communautaire and the results of the accession negotiations will reform several economic conditions. As a result of the accession negotiations, a part of the enterprises have to face burdens, which do not make it possible to increase the production volume. Beside the organization issues of the newly formed enterprises, we should examine the situation and expectable perspectives of the elements of enterprise organization.

After the change of regime, an increased demand arouses in property owners in Hungary by the development of the market economy to get to know the value of their property. The concerned soon realised that the enterprise organization is determinative in this case, and furthermore, the booking value is only limitedly suitable for determining the open market value.

The regulation of the Ministry of Finance (25/1997. (VIII.1.) and the European Valuation Standards published in 2003 gave methodological base for determining the real property value. These include mainly only guidelines; the assessment depends on the subjective experience and the empirical idea of the evaluator. Due to this fact, there is not any generally accepted and uniformly utilised evaluation method based on objective bases.

Regarding the opportunities existing in agriculture and the challenges coming from the EU accession, in order to establish normal market processes and economic transactions it is now time to reveal the correlation between the elements of enterprise organization and property value and by this to develop the methods for evaluation property.

In my research I studied the correlation between the enterprise organization and property value on 71 dairy farms in the county of Hajdu-Bihar. My aims were the following:

- To analyse the role of enterprise organization in farming and its profitability on the basis of data published in literatures dealing with enterprise organization and its elements.

- To introduce the enterprise organization of the investigated farms and to reveal the correlation in connection with the elements and problems of enterprise organization after the change of regime.

- To work out the method for evaluation animal farms based on analysing open market values. To reveal the connections between the enterprise organization and the property value, and to quantify the corrective effects of several important factors by modelling.

- To criticise the methods used in evaluating property.

,

RESEARCH METHOD

I started my research with studying the professional literature on this topic. I gathered and analysed literatures on enterprise organization first, then on evaluation on property, enterprise and real estate. Altogether I analysed 197 literatures and 35 laws and other sources relating to the topic. Beside the literature on enterprise organization and the economic base of evaluation I gathered and analysed even literatures on branch issues of milk production and on issues of the whole food economy.

The following methodological fields may be highlighted regarding the aims of the research. On the basis of the first two aims, I deal with the enterprise organization of dairy farms and analysing the enterprise organization issues of the investigated farms. These do not differ from each other in structure. I established hypotheses. I checked their relevance by economic calculations.

I investigate the general issues of evaluating enterprise, property and real estate and their characteristics, which may be used for dairy farms as third and fourth fields. I reveal the correlation within the enterprise organization and property value within the third aim, and I worked out a method on the base of comparing open market data and I modelled the corrective effects of the distance of fodder area. I made suggestions for developing the depreciated replacement cost valuation and the discounted future earnings valuation according to the fourth aim.

I investigated the dairy farms in the county of Hajdu-Bihar, where the average cow number reached the 20 cows. This determination occurred using the threshold of Standard Gross Margin considering economic viability used in the European Union for a long time. I show the investigated farms by a map in Figure 1.

Figure 1: **Location, animal number and distribution of the investigated dairy farms in the County of Hajdu-Bihar (2001)**
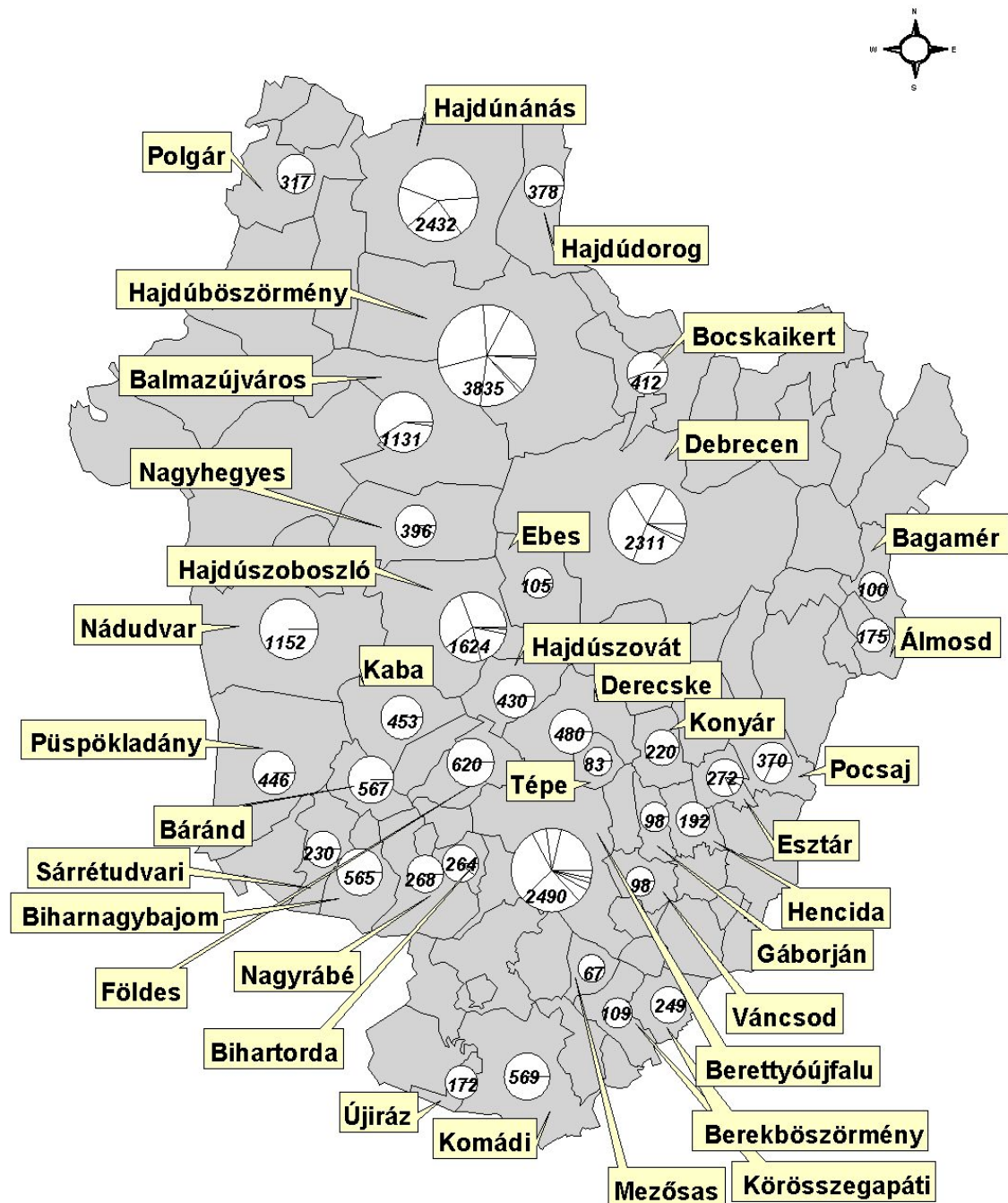
Source: own figure

Note:. The size of the circles is proportional with the number of the cows; the circle sections represent farms. Figures in the circles show the total cow number, sections refer to the distribution of cow number by dairy farms within settlement.

Methods for investigating enterprise organization

- I regularly visited a part of the farms chosen on the basis of the economic viability. I visited 37 farms between 2001 and 2003, however, I could not get to the remaining 34 farms. In this part of the data gathering, I was supported by four students' investigation on the farms I could not visit. In this way, I managed to gather direct data on almost all of the chosen farms. The cause of the deficient survey is the holding aloof and distrust, which was caused by crises situations. I made critical interview with the enterprise manager, the economic manager, the branch manager and shift manager, gathered important documents (such as yearly announcement, registers, branch reports, documents of application, credit instance, plan documents, valuations, etc.) found in the farms. Beside these I regularly consulted with blue-collar workers in the farms, who helped me a lot to have even informal information about the farms. On the basis of the available data, I studied the enterprise organisations of dairy farms in the county of Hajdu-Bihar.

- Besides primary data gathering, I got further information from Animal Breeding and Performance Testing Ltd, Milk Product Council and from the Association of Farmers in the county of Hajdu-Bihar.

- I systematised and analysed the data according to determined guidelines. I strove to reveal the correlation between the elements of the enterprise organization, for which I created tables and figures as well as maps. To reveal correlation, I used simple statistical methods (such as arithmetic means, weighted means, and proportion of means of ratios, supply indicators, demand indicators), furthermore I used linear correlation to investigate correlation.

- I used the methods of economic analysis on the basis of the traditions of the Debrecen Farm Business Academy founded by Ivan Professors Gonczi, Bela Kadar and Laszlo Vadasz. To show the mechanical state, I worked out farm reconstruction variations.

Methods for investigating the correlation between enterprise organization and property value

When sorting corrective factors for property value, I separated the external conditions of the farm (factors independent from the farmer), and conditions susceptible to influence (factors dependent on the farmers). To reveal the correlation between the corrective factors in the open market valuation and to quantify their effects, I used multi-variable statistical methods, such as principal component analysis, cluster analysis, analysis of discriminant and logistic regression within the SPSS program. The database of the model is real sales realised in the recent past and actual proposals to purchase of 19 farms.

I reduced the originally 17 corrective factors to 9 ones because of the low element number. I ranked the 19 farms in a scale from 1 to 5 according to all of the variables, to which I made extra tables for keeping the objectiveness. On the basis of the variable averages of the farms, I grouped them into three qualifying categories. This was proved by the results of the cluster analysis. I reduced the number of the variables to three ones by principal component analysis, then I strengthened the variables groups by a further cluster analysis. This reveals the factors where the differences between qualifying of farms belonging to the same group are minimal. The results of the cluster analysis on the basis of the principal component are different from the situation caused by the original variables. The differences can show which factors to what extent might play roles in forming the values of the farms. The quality forming role of principal components and their elements was proved by even analysis of discriminant. Involving the prices of the farms and carrying logistic regression out, I could calculate to what extent the factors contribute to the fact that a certain farm is in a given category. The constructed model is suitable for determining the value of a farm not listed in the database.

I studied the corrective effect of the distance of fodder area from the factors independent from farmers. I made fodder cost optimisation by linear programming model supposing an average dairy farm. Calculating margin average cost and average cost on the basis of the average transportation cost, I could determine the maximal distance, within which the fodder does not have any cost increasing effect.

Methods for criticising the practice of evaluation property

- When studying literatures I revealed the differences between enterprise evaluation, property evaluation and real estate evaluation.

- I investigated the regulation of Ministry of Finance 25/1997. (VIII.1.) containing the methodological principals, and disclosed the mistakes and contradictions not taken into consideration by the law.

- To evaluate open market value more trustfully, I worked out a multi-variable method, by which the effects of corrective factors may be quantified.

- To strengthen the methodological basis of discounted future earnings valuation, I explored the most typical mistakes and suggested methods to avoid them. I revealed the difference between evaluations of enterprise property and real estate, which are usually mixed in practice. I drew attention to the dangers of improper selection of interest rates, and proposed a calculation to determine the capitalisation interest rate of dairy farms.

- With respect to depreciated replacement cost valuation, I highlighted the proper assessment of depreciation. To carry out this, I used the Methodological Study-Aid for Evaluating Real Estate of the Hungarian Central Statistical Office. I suggested depreciation categories, which take the characteristics of animal farms into consideration. This method is suitable for reducing subjective factors when evaluating depreciation.

IMPORTANT FINDINGS OF THE THESIS

The results of the research may be summarised in four groups according to the aims.

- Studying literatures on enterprise organization I revealed what role its elements play in farming, highlighting the opportunity of the new approach of enterprise organization.
- Investigating the enterprise organization of the examined animal farms, and exploring the correlation between elements of enterprise organization. Partly judging the hypothesis relating to enterprise organization and property evaluation.
- I studied the major correlation between enterprise organization and property value. I disclosed the correlation between enterprise organization and property value.

I worked out a method for evaluating animal farms, which is based on analysing open market values of dairy farms. Furthermore, I highlighted by modelling that the corrective effect of the distance of fodder area may be quantified.

- I criticised the methods in agricultural property evaluation.

Studying literature on enterprise organization

Processing literatures on agricultural enterprise organization I explored the significance of the topic in the profitability of farming. I studied literatures on selecting enterprise form, resources (fodder area, animal stock, mechanical and technical conditions, labour, management), enterprise size and production structure. I highlighted that the research field of enterprise organization, such as establishing agricultural enterprises, revealing the most important principals and connections, became re-valued due to the EU accession. There is not any, or just limited opportunity to expand the recent production volume in several agricultural branches after the accession. Dairy cow keeping belongs to these branches, where instead of analysing the enterprise organization issues of newly forming farms, the situation, state and expectable perspectives should be analysed beside the available capacity.

Hypotheses of the research

The change of regime caused a significant change in animal farms, especially in dairy farms. At the beginning of my research, I started with the hypotheses that the operational forms of the transforming farms and utilising solutions of dairy farms transformed in four ways. These are the following:

- a part of the farms deal with milk production in another form by an unchanged or an altered technology,

- a small part of the farms organise themselves into other animal branch, or the farm is used for off-farm activities,

- during the transition, a part of the farms get into the ownership of more owners, and different activities of animal breeding can be found within the farm,

- a certain part of the farms become unclaimed, the state of the highly depreciated assets become worse, and the production ceases.

My first and fourth hypotheses were strengthened; the second and third ones realised to a smaller extent. I supposed that there is a positive correlation between certain elements of enterprise organization and standard of yields as well as the property value. This hypothesis cannot be adequately proved.

Enterprise organisations of the examined farms

I made a detailed survey in the county of Hajdu-Bihar for analysing the enterprise organization of the investigated dairy farms, exploring the main connections of the elements of enterprise organization. According to my premise, the fodder area (Table 1.) and the mechanical-technological conditions (Figure 2.) determine the profitability of milk production in the most significant way. I determined the conditions, and when these are neglected, the given dairy farm may be taken as critical.

The per cow fodder area is 2.52 hectares considering average cow numbers of the examined farms. Four farms do not have any fodder area. This affects 6% of the total cow number. These farms are in the most critical situation with respect to the fodder area supplementation. Less than 1 hectare gets to one quarter of the cows, while 36% cow number rate belonging to 17 large scale farms have average sized (1-2.52 hectares) fodder area. The medium and small sized farms have the most favourable conditions in connection with fodder area supplementation. The number of the farms is 40% from the total; on the other hand the cow stock does not reach the third of the total cow number.

I extended my investigations to study even the mechanical state of equipment. To characterise the mechanical state, I used the date of foundation and renovation of the farms. According to Figure 2., the space in loose housing system being in unfavourable mechanical state takes up of 56.0% of the total cow space, while the modern ones are only 35.9%.

Figure 2: **Technology of dairy cow keeping and the mechanical state of dairy farms in**
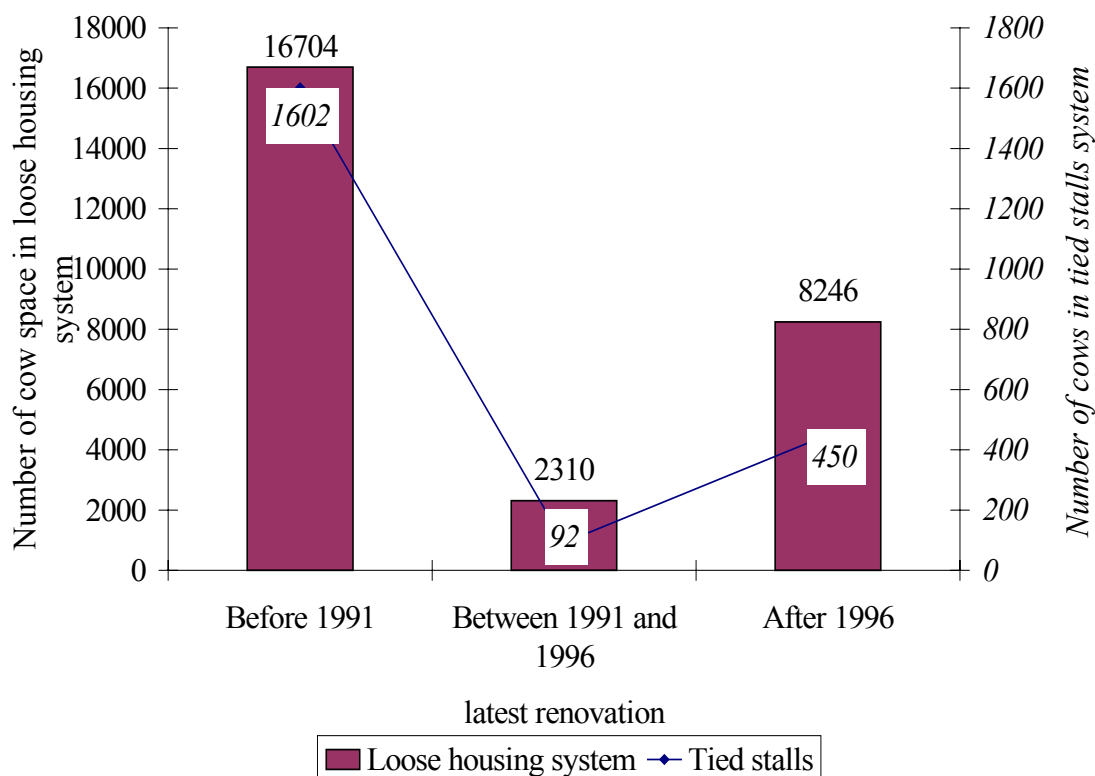

the County of Hajdu-Bihar in 2001

Source: own survey

The utilisation of the available cow space is 78% in the examined dairy farms in the county of Hajdu-Bihar, which distribution on the basis of the animal stock per farm is shown in Figure 3. According to this Figure, the rate of utilised cow space is increasing by the increase of the cow number. This fact is true except farms keeping 51 to 100 cows, where the rate of the utilisation is lower than in the smallest farms.

Regarding the utilisation of cow space, there is not any significant difference on the basis of the foundation date of the farms, due to the fact that beside foundation date, even several other factors, such as the date and method of reconstruction and renovation, determine their mechanical states. That is why I examined the closeness of the correlation between the past time from the date of the last renovation and the utilisation of cow space by linear correlation.

Figure 3: **Utilisation of cow space by animal stock size in the County of Hajdu-Bihar in 2001**
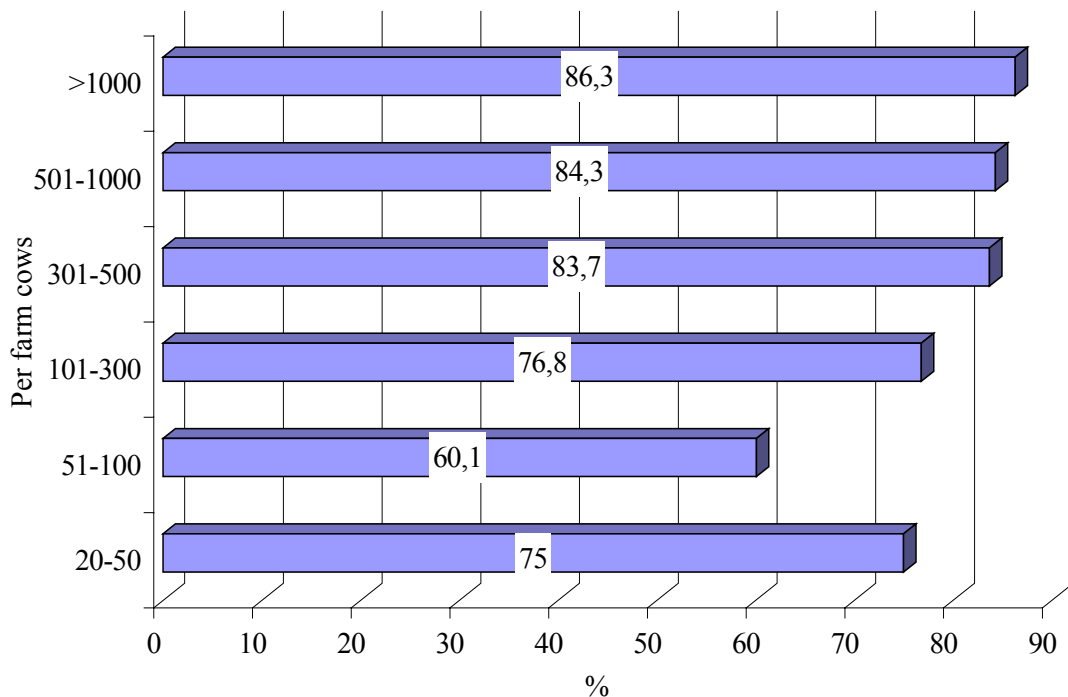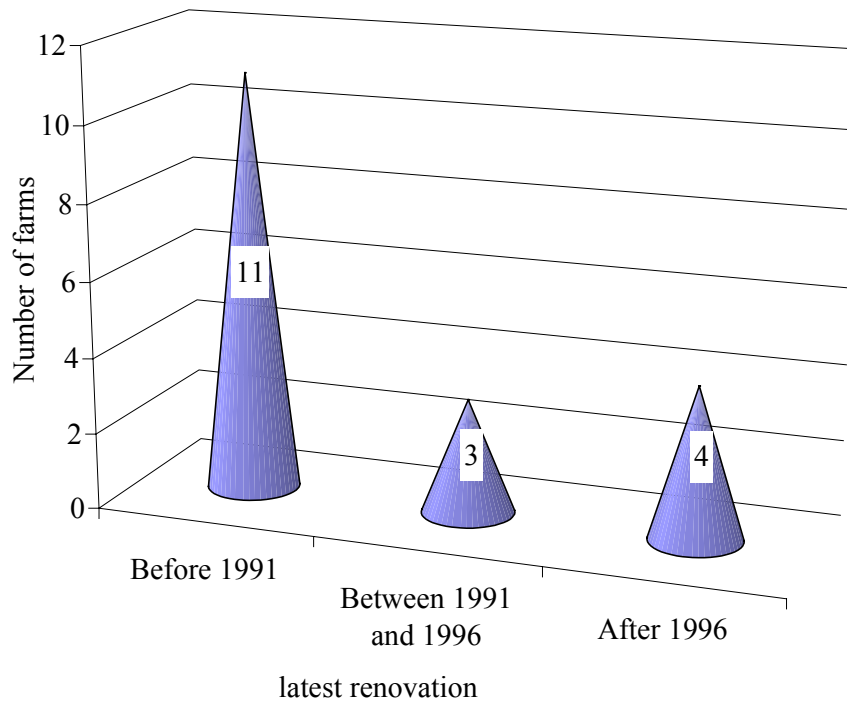

Source: own survey

On the basis of my premise, the shorter time left from the date of the renovation, the higher the rate of utilisation is. The calculation does not judge the supposition, the correlation co-efficient is –0.03, which means that the factors are independent from each other.

Modernisation of dairy farms ceased at the first part of the 1990's, than it accelerated in the second part of the decade. To judge or deny, I studied the mechanical states of buildings and technological equipment in dairy farms in the county of Hajdu-Bihar, separating farms having milking parlour and farms having not any. Figure 4. shows that the last reconstruction happened before 1991, and only 25.7% of the cow space were renovated since 1996 in farms with no milking parlour.

Figure 4: **Distribution of dairy farms with no milking parlour by the last date of renovation in the County of Hajdu-Bihar in 2001**

Source: own survey

Figure 5. illustrates the distribution of per farm animal stock in dairy farms with no milking parlour. The figure highlights that farms having more than 500 cows deal with milking in milking parlours. Small-scale farms having less than 100 cows take up of half of the farms having no milking parlour, at the same time they have only 13.8% of the total cow space. The decreasing profitability of milk production has made the situation of milk producers more unfavourable. Investment for modernisation may hardly be realised from the small amount of profit.

Figure 5: **Distribution of dairy farms with no milking parlour in the County of Hajdu-Bihar in 2001**
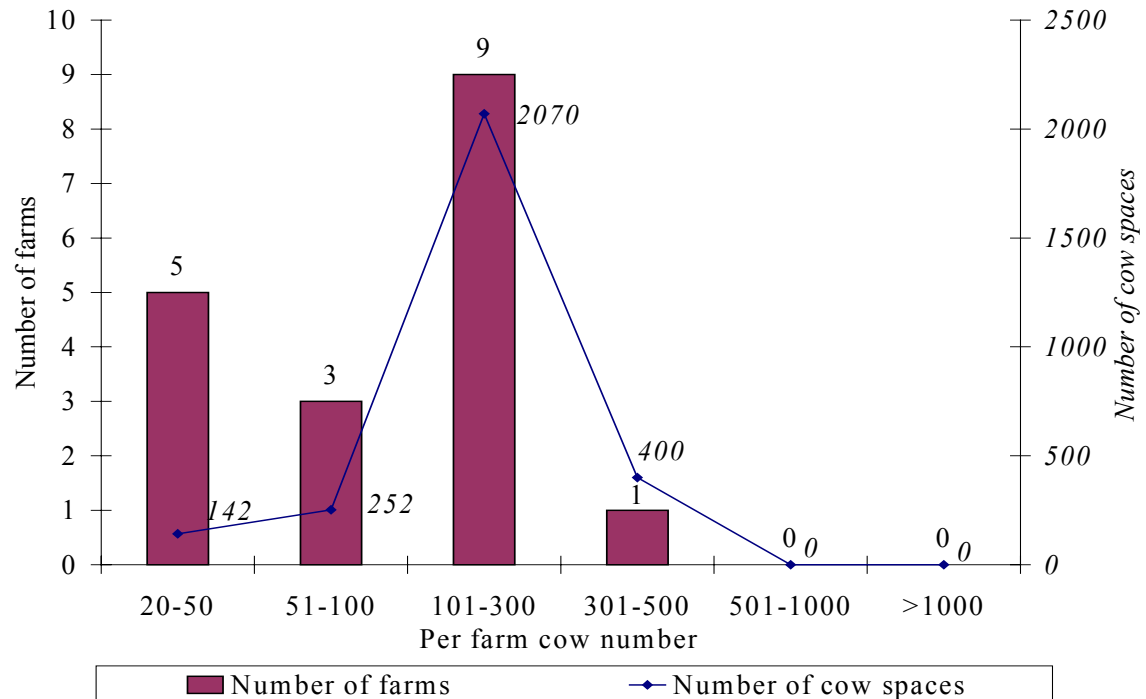
Source: own survey

I studied separately the mechanical state of milking parlours and other equipment. I worked out three categories again, thus handling two factors together; I created nine farm reconstruction varieties. By doing this, I tried to contribute to the objectiveness of the examination.

Table 1.

Defining farm reconstruction varieties

Denomination	Milking parlour	Other equipment
A	After 1996	After 1996
B	After 1996	Between 1991 and 1996
C	After 1996	Before 1991
D	Between 1991 and 1996	After 1996
E	Between 1991 and 1996	Between 1991 and 1996
F	Between 1991 and 1996	Before 1991
G	Before 1991	After 1996
H	Before 1991	Between 1991 and 1996
I	Before 1991	Before 1991

Source: own survey

According to my research, I believe that the most important establishment in dairy farms is the milking parlour, as among other farm equipment it affects the profit to the largest extent. In this way, it is favourable, that 36 of 53 farms' milking parlours have been renovated since 1996 (A, B, C reconstruction varieties), or a totally new one has been established, as it is illustrated in Figure 6. This concerns 65.7% of the cow spaces in farms with a milking parlour, and 59.3% of the total cow space. 31.1% of the cow space in farms with a milking parlour have been renovated since 1996; the milking parlour and other establishment were modernised in 27% of the cow space. It is unfavourable, that neither the milking parlours nor any other establishments have been renovated in 10 farms since 1991. These farms need renovations soon in order to maintain their competitiveness after accession. The deficient investments are needed even in the five farms belonging to the categories E, F, H, which take up of 256 cow space.

Figure 6: **Distribution of dairy farms having milking parlour by the last date of renovation in the County of Hajdu-Bihar in 2001.**
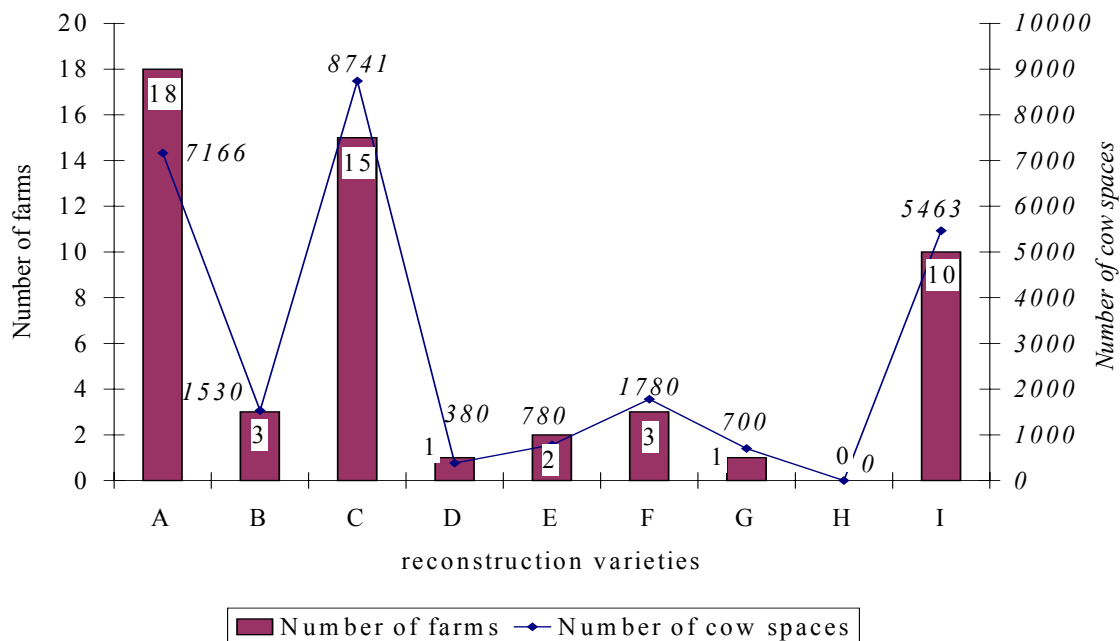
Source: own survey

The results of investigation on enterprise organization highlight that the critical farms relating to yields do not match with the critical farms relating to the elements of enterprise organization, thus there is not a significant difference between enterprise organization and yield standard.

Modelling Connections between Enterprise Organization and Property Value

When studying the elements of enterprise organization separately, a demand for a method of a complex approach arouse, which focuses on not only one factor and its corrective effects, but it is able to quantify the corrective effects of all of the examined factors. Involving multi-variable statistical methods, I quantified the corrective effects of factors modifying the value of dairy farms by modelling (Table 3.).

I created nine variable groups from the original 17 variables in order to make the data processing simpler and to increase the reliability of the results. These variables depend on each other, but their own role can hardly be measured, thus further data reduction was necessary to determine their value corrective effects. By using principal component analysis, I created three principal components being separated from each other from the nine variables. These three principal components saved their original information content in 85.4%. Except for the building lot conditions and the value of breeding animal, the classification of all of the variables are unambiguous.

Table 3.

Classification of Variables into Principal Components on the Basis of Weights

Variables	Principal components		
	1	**2**	**3**
Booking value	**0.936**		
Modernity of technology	**0.932**		
Mechanical state	**0.904**		
Legal limits		**0.925**	
Animal and environmental conservation		**0.804**	
Labour		**0.781**	
Building lot conditions		**0.722**	0.414
Fodder area			**0.936**
Value of breeding animals	0.555	0.372	0.662

Source: own survey

By using cluster analysis, I classified the farms into relatively homogeneous groups so that the farms belonging to the same group should assimilate to each other, but should differ from farms being in other groups. The results are similar to those of categories poor, average and excellent created earlier by scoring the factors.

I examined the quality-forming role of principal components by discriminant analysis in order to strengthen the results of cluster analysis done by centroid method. The method classified the three quality groups on the basis of two functions. The first discriminant function involves the first principal component (mechanical state, modernity of technology, booking value), with 0.98 discriminant weight. The second function with 0.48 and 0.43 weights involve the second (legal limits, animal and environmental conservation and building lot conditions) and the third principal components (fodder area). The classification is exactly the same as the one obtained by cluster analysis.

The analysis proves properly my former suppositions. The high discriminant value (3.10) of the first function in the group of farms qualified as excellent indicates that the principal component involving the mechanical state is significant in determining quality. Furthermore, the average (1.58) of the second function of the m farms qualified as average is higher than that of the farms qualified as excellent (-0.79). This proves that the second and third principal components are important in the farms qualified as average.

After reflecting the role of variables in qualifying farms, I investigated the connections between factors and marker prices. To carry out this, I involved the average price into the variables and made cluster analysis. Two clusters were formed, the clusters of low and the high price categories.

As a result of the cluster analysis, the farms with average and poor qualifications got into the low price category, the excellent ones into the high price category (Table 4.).

Table 4.

Classification of farms into price categories according to quality categories

Denomination		Number of elements of price categories in centroid method	
		Low price category	High price category
Quality categories	Poor	**5**	0
	Average	**6**	3
	Excellent	1	**4**

Source: own calculation

The data of farms classified improperly suggest that the third principal component plays the most important role in forming market price.

The examination above does not prove reliable the price forming effect of the principal components. To judge my premise, I carried out logistic regression. The method shows the weight of the principal components, which decides which category a certain farm will get into. The results of the calculation are summarised in Table 41.

I concluded that the modernity of the utilised technology, the technological organization of the farm determine the value of dairy farms to the largest extent, and the fodder area to a smaller extent (Table 4.).

Table 4.

Price forming effect of the first principal component

Denomination	Chance co-efficient	Weight
1. principal component	**5.08**	**0.52**
3. principal component	2.83	0.33
Mechanical state	0.33	-0.19
Booking value	1.21	0.05
Modernity of technology	**6.64**	**0.40**

Source: own calculation

The other factors have smaller effects in forming the value. Thus the calculations proved my former premises. I highlighted furthermore, that the two factors mentioned above are dominant in farms having the highest price, but their weights are almost equal (Table 5). Besides the modernity of technology, the animal and environmental conservation have near equal weights (Table 6.).

Table 5.

Price forming factors of farms having the highest prices

Denomination	Chance co-efficient	Weight
1. principal component	3.322	0.381
3. principal component	3.022	0.351

Source: own calculation

Table 6.

Price forming factors of farms having the lowest prices

Denomination	Chance Co-efficient	Weight
1. principal component	**4.803**	0.44
2. principal component	3.907	**0.506**

Source: own calculation

The model created for the open market valuation is suitable for increasing the objectiveness of the method in a new approach when compared to the former practice. The method development proved the hypothesis that objective property valuation cannot be done that without revealing the correlation between corrective factors.

The multivariable analysis confirmed that the size, quality and location of fodder area are the most important issues for enterprise organization. Especially, the distance is determinative due to the significant transportation costs. I found that the maximal distance could be determined by model calculation, within which the fodder area does not reduce the value of the dairy farm. The linear programming is based on optimising the fodder portions of dairy farms.

By the help of the average transportation cost, the critical distance comes from the difference between margin average cost and average cost. Fodder area within this distance increase the value of the farm, the farms being out of the distance reduce the value of the farm.

These distances depend on nutrient content and cost of fodder and fodder needs of animals. It should be highlighted though that the results of modelling just prove the fact that important factors of enterprise organization can be quantified.

Criticising property valuation methods

I carried out method development in order to utilise the three accepted methods (open market valuation, depreciated replacement cost valuation, discounted future earnings valuation) for evaluation in Hungary property more objective. By utilising these methods, the open market value of animal farms may be evaluated more reliable.

Table 7.

Reliability of open market data

Aspects of reliability	Most reliable	Reliable	Least reliable
Source of data	Sales contract	Oral information on realised sale	Advertisement
Date of data	Within 1 year	For 1 to 2 years	For 2 to 3 years
Perspectives of the farm	Average profitability typical to the branch	With financial difficulties, but liquid farm	Bankruptcy, before liquidation
Aims of real estate purchase, interest relations	Consumer concerned in the branch	Normal business relation between seller and consumer	Speculation is expected

Source: own research

The model mentioned above serves the further development of open market valuation.

It should be highlighted that the reliability of open market data has to be supervised in order to reflect correct value relations. I suggest three categories of data according to their reliabilities: least reliable, reliable, most reliable (Table 7.)

When developing discounted future earnings valuation, I separated the valuation of real estate and valuation of property valuation. I highlighted that when evaluating an animal farm, the value calculated from the profit of the branch involves every property- element and non-property element, which contributed to the profit. The practice, however, takes only real estate and built-in technologies into consideration. In this case, it is not a complex property evaluation; that is, the base of the capitalisation may be the opportunity cost of utilising the real estate.

I calculated the branch profit by a technological model. I determined the conditions of the average operation and the reachable average profit. According to my estimation and to data of the Institute of Agribusiness Research Information, I concluded that milk production gains only small profit or loss on the basis of the purchase price in the middle of 2004.

Due to often increasing market risks, financial risks and macro-economic risks, I found that it is important to quantify the elements of capitalisation interest rate. As a result, I got 15.5%, which is similar to that suggested by the Land Credit and Mortgage Bank (15%).

When using depreciated replacement cost valuation, the biggest problem is to calculate properly the depreciation of buildings. According to the Methodological Study-Aid for Evaluating Property of the Hungarian Central Statistical Office, I made five state categories from the excellent to the unusable. The establishment of the animal farms may be classified into a certain category according to the major characteristics of the categories. The categories represent a state interval, thus instead of subjective valuation, this method can be considered more reliable.

NEW RESULTS OF THE THESIS

1. By processing literature on agricultural enterprise organization I showed that the topic is extremely important in forming profitability of farming. **I studied and systematised the national and international literature on enterprise organization and property valuation.**

2. I created hypothesis in connection with enterprise organization. **I proved the premise that the majority of former farms transformed and a few of them ceased. The ownership division has smaller significance and utilising farms for off-farm purposes is slight. I defined the conditions, without them the farms can be taken as critical from a given aspect. I carried out reconstruction varieties for characterising mechanical state in order to strengthen the objectiveness of the qualification.** The results show that the **critical farms relating to yields are not the critical farms relating to elements of enterprise organization. Thus there is not any significant difference between the quality of enterprise organization and yield standards.**

3. When revealing connections between enterprise organization and property valuation I highlighted on the basis of literature, that **the registered booking value is suitable for evaluating real value in a limited way. To determine the reliability of open market data, I constructed a category table with four aspects, in which the open market data can be weighted according to their reliability.**

   Involving multi-variable methods, I quantified the factors correcting values of dairy farms by modelling. **I concluded that the modernity of the used technology, the technological organization of the farm determine the value of the farms to the largest extent, and the fodder area to a smaller extent. The other factors play less important role in forming the value.**

   I found that the two factors mentioned above are dominant in farms having the highest price. Besides the modernity of technology, the animal and environmental conservation are near equally dominant in farms having the lowest price.

I concluded that the distance of fodder area determine significantly the value of animal farms. **My model calculations proved that the distance of the fodder area could be quantified.**

4. I criticised the methods for evaluation agricultural property used in practice. When developing discounted future earnings valuation, I separated the valuation of real estate and valuation of property valuation. I highlighted that **when evaluating an animal farm, the value calculated from the profit of the branch involves every property element and non-property element, which contributed to the profit.**

I calculated the profit of milk production by a technological model. **I determined the conditions of the average operation and the reachable average profit. I calculated the average capitalisation interest rate in 2004**, which is similar to that of the official suggestions.

According to the Methodological Study-Aid for Evaluating Property of the Hungarian Central Statistical Office, I made five state categories. The establishment of the animal farms may be classified into a certain category according to the major characteristics of the categories. The categories represent a state interval, thus instead of subjective valuation, this method can be considered more reliable.

PUBLICATIONS IN THE SUBJECT OF THE RESEARCH

1. Horváth J.: Klasszikus magyar és korszerű amerikai üzemtani szakkönyvek összehasonlító elemzése. XLIII. Georgikon Napok „Vidékfejlesztés – Környezetgazdálkodás – Mezőgazdaság", Keszthely, 2001. 398-402. p.

2. Horváth J.: Arrangements of several dairy farms in Eastern Hungary. Prospects for the Agriculture of the 3rd Millenium. International Symposium, Cluj-Napoca, 2001. 143-146. p.

3. Horváth J.: Berendezkedés és vagyonérték vizsgálata néhány szarvasmarha telepen Hajdú-Bihar megyében. DOSZ – Tavaszi Szél, Gödöllő, 2001. 107-108. p.

4. Horváth J.: Mezőgazdasági ingatlanok közvetítése és értékbecslése az Egyesült Államokban. Ingatlanértékelési füzetek. VIII. évf. 32.szám. Profinvest Kft., Budapest, 2001. 91-98.p.

5. Horváth J.: A farmok öröklésének aktuális kérdései az Egyesült Államokban. Agrártudományi Közlemények /Acta Agraria Debreceniensis (különszám). Debreceni Egyetem, Debrecen, 2002. 55-58. p.

6. Horváth J. – Nemessályi Zs.: Nagyüzemi szarvasmarhatartó telepek működési feltételeinek és berendezkedési összefüggéseinek változása. VIII. Nemzetközi Agrárökonómiai Tudományos Napok. Gyöngyös, 2002. 47-53. p.

7. Horváth J.: A vagyonérték változása nagyüzemi tejtermelő tehenészeti telepeken. VIII. Nemzetközi Agrárökonómiai Tudományos Napok. Gyöngyös, 2002. 41-46. p.

8. Nemessalyi, Zs. – Horvath, J.: Arrangements issues of farming in Hungary. Társszerző: Nemessályi Zs. Poverty and Wealth in Rural Areas. 12th Annual Meeting of the Austrian Association of Agricultural Economists. University of Agricultural Sciences Vienna, Austria. 2002.

9. Horváth J.: A berendezkedés szerepe a tejtermelés versenyképességében. XLIV. Georgikon Napok, Keszthely, 2002. 31. p.

10. Horváth J.: Specializált és diverzifikált ágazati struktúrák a tejtermelésben. In: Innováció, a tudomány és a gyakorlat egysége az ezredforduló agráriumában. DE-MTK – SZIE-MKTK, Debrecen, 2002. 197-202. p.

11. Horváth J.: Mezőgazdasági beruházások tervezése és finanszírozása. Őstermelő. VI. évf. 2.szám. Primom Tanácsadó és Információs Hálózat, Nyíregyháza, 2002. 16-17. p.

12. Horváth J.: Tejtermelő tehenészeti telepek versenyképességének megítélése. Agrártudományi Közlemények /Acta Agraria Debreceniensis (különszám). Debreceni Egyetem, Debrecen, 2003. 256-260. p.

13. Horváth J.: Tejtermelő tehenészetek berendezkedési összefüggései az EU csatlakozás küszöbén. In: Gazdálkodók esélyei az Európai Unióban. NyME-MÉK Európai Uniós Oktatási Központ, Mosonmagyaróvár, 2003. 1-10. p.

14. Horváth J.: Vagyonértékelési módszerek a mezőgazdaságban. In: Agrárgazdaság, vidékfejlesztés és agrárinformatika az évezred küszöbén. DE-AVK, Debrecen, 2003. CD kiadvány

15. Horváth J. – Nemessályi Zs.: Különböző vagyonértékelési módszerek elemzése mezőgazdasági vállalkozásokban. In: XLV. Georgikon Napok, Keszthely, 2003. CD

16. Nemessályi Zs. – Horváth J.: A takarmánytermő terület távolságának szerepe a tehenészeti telepek értékelésében. In.: IX. Nemzetközi Agrárökonómiai Tudományos Napok. Károly Róbert Főiskola, Gyöngyös, 2004. CD kiadvány

17. Horváth J.: Ingatlan- és vagyonértékelési módszerek fejlesztési lehetőségei a mezőgazdaságban. Agrártudományi Közlemények /Acta Agraria Debreceniensis.13. szám Debreceni Egyetem, Debrecen, 2004. 241-247. p.

18. Horváth J.: Tejtermelő tehenészeti telepek műszaki-technológiai feltételei. Gazdálkodás. XLVII. évfolyam 4. szám. 2004. 60-66. p.

19. Horváth J.: Koncentráció és horizontális integráció a tejtermelésben. Agrártudományi Közlemények /Acta Agraria Debreceniensis. 14.szám. Debreceni Egyetem, Debrecen.2004. 60-67. p.

20. Horváth J. – Kovács S.: The examination of the effects of value modifying factors on dairy farms. Journal of Agricultural Sciences. (megjelenés alatt)

21. Horváth J. – Badacsonyi A.: Korszerű vagyonértékelési módszerek a mezőgazdaságban. Agrárgazdaság, Vidékfejlesztés és Agrárinformatika nemzetközi konferencia, Debrecen (megjelenés alatt)