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**Thesis of PhD Dissertations**

# THE LONGITUDINAL EXAMINATION OF AGRICULTURAL SMALL-SCALE ENTERPRISES IN HEVES COUNTY

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## 1. Introduction

Agriculture has been playing a decisive role in defining the profile of rural areas for centuries and the social-economic conditions of the people who live there. At the same time, agriculture that manages resources properly has significant effects on creating as well as on preserving natural environment and the habitat of plant-and animal species.

To preserve habitats in Nature at least in their present state there is a need for such agricultural practice and measures that can wisely manage local resources and can secure a proper living for the members of the rural community.

## 2. Topic

After the change of regime agriculture underwent series of significant changes although this process had been long enough before the change of the regime, as well and is expected to continue in the future but we can count with its acceleration only since then. All these changes have been reflected in the change of land ownership as well as in the restructuring market relations. As a result, co-operatives were transformed, old and new companies, business units and private enterprises appeared.

After the 1989-1990's the role of private enterprises has significantly become greater in the Hungarian economy and their production exceeded 50% even during this period.

At present 40% of the agricultural area is cultivated by private enterprises and 60% by other business units. The problem is that while the number of private enterprises is nearly 707 thousand, 93.6% of them cultivate an area smaller than 10 ha which does not reach the category of an optimal size regarded to be viable and operated economically and profitably. It arouses the question of the competitiveness of family farms and the possibility of effective production.

We cannot disregard the fact that part of these enterprises is so-called "compulsory", i.e. farmers deal with agricultural production due to the lack of other possibilities and if they gave it up, it would endanger their living.

On the other hand, this activity can only ensure supplement of income and makes the supply of the family possible with home-grown food.

Their importance is firstly reflected in food production - contributing to domestic sales and to export- and also plays a role secondly in self-sufficiency. Their significance also needs attention as they are able to use several resources properly that large-scale enterprises would be unable- due to technical, organisational, effectiveness or profitability considerations or would be only by means of further investment.

Regarding its presence, the agricultural small-scale enterprise can primarily be found in villages to ensure a way of living for its participants. For the producers, endowments are agricultural areas bordering the villages, passing small-scale enterprises down to generations and using the knowledge of management and means inherited from the parents. When looking back to the first decades of agricultural life we can see that the co-operation of small-and large-scale enterprises within special frames was realised in an exemplary way in the world. This co-operation started to decay whose primary reasons were world market influences, technological development, modernisation and need for capital.

Agriculture still requires integration and several alternatives were suggested by renowned experts. Compulsory collectivisation has had a deep impact on the people of the country engaged in agriculture and, quite understandably, they do not show willingness to associations founded on a voluntary basis that work well in the countries of the EU with a developed agriculture and has brought the desired results.

Common Agricultural Policy puts a great emphasis on family farms (agricultural small-scale enterprises), as they will also play a significant role in environmental protection, rural development and employment besides production in the future. The question is whether the Hungarian small-scale enterprises will be able to fulfil these tasks when they can hardly cope with the problems of securing a living.

The objective is to continue the concentration of the estates, which can facilitate the effectiveness of production, technological advancement and also will incur further problems of employment.

On the basis of the facts above, we can see that this is a complex economic-social problem that has to be analysed from different points of view to make well-considered decisions that help rural development as well as that the impacts of measures taken so far

could be measured and corrected in due time if the expected effect is missing or modified.

In my dissertation under the term agricultural small-scale enterprises I do not only mean those with a taxation number but also the family and private farms which are under 8 EUME in the European Union, under Hungarian circumstances (and those of the newly joined members) the upper limit of those producing exclusively for own consumption is 1 EUME, those who sell surplus besides own consumption are between 1-2 EUME. Market-oriented (goods producing) farms are those above 2 EUME who carry out activities to ensure the living of the family and mainly not in the form of partnerships (except partnerships belonging to the same family). The terms used to refer to them are different: small-scale production, private enterprise, private farm, family farm etc. Regarding the objective of the examination their names do not matter although there are differences in the meaning of these terms as well as they also cover content changes.

## 3. The history of the research

My research topic goes back to 1993 when I started to work as a teaching assistant at the Department of Work Management and Organisation of the College Faculty of Agriculture, Gyöngyös of the University of Agriculture, Gödöllő. It was the time when I got acquainted with my research topic that was started by the national survey of the Central Statistical Office (hereafter referred to as CSO) in 1992, so it also included Heves county. At that time I continued data collection and research in connection with it based on the farms designated by CSO. I finished this activity in 2006 going back to 2005.

Due to the constraints of size, my dissertation cannot include the results of the survey in details. The data that I could not publish at the evaluation of tendencies will, of course, be used at the disclosure of the reasons.

## 4. Objectives

**The main objective of my paper** is to examine if the longitudinal method is really suitable for the development successive examination of the participants in agriculture.

It was not my objective to deal with the operation of the present economic systems, the intrinsic relations of price-and support system, the profit content of agricultural prices or the qualification of the system decisive for the development of agriculture.

**In my paper —** among others **—** I wish to examine if longitudinal examination

- if longitudinal (development or change successive) examination can contribute to making the right economic-political decisions by disclosing certain processes and the factors affecting them (more precisely, by means of supports),
- if it can support and justify the accuracy of decisions and base predictability as well as preparations for decisions and
- if there is possibility for decision makers to trace back and influence the population-retaining capacity, the increase of employment rate and making a living in time with its application.

After the introductory thoughts to achieve my objective in the dissertation:

- **I will review the specialist literature** in which I will deal with the development of agri-structure, the terms of agricultural enterprises, private farms and the participants of a similar activity in the farm.
- I wish to reveal the significance of longitudinal examinations, the topicality and opportunities of their application by presenting the population-retaining ability and the formation of employment.
- **I will define** the term longitudinal (development-and changes-successive) examination in an own interpretation.
- **I will review the methodology of processing** in which I will deal with the data base used, the methods applied during the own examination and I will present Heves county as the geographical and economic target of the survey with some of the important features of its private enterprises.
- **I will evaluate the results of the longitudinal survey** of 15 years comprising 31 private enterprises of Heves county based on own compilation and partly on CSO data via the processing of the personal particulars of farmers, the formation of land size and the detailed analysis of the areas of plant, vegetable, fruit-and grape production and animal husbandry.

– In connection with this, **I would like to make a suggestion** about data collection, processing and analysing opportunities that serve as the foundation of the decisions for agricultural development and to have a feedback on the effects of the decisions to reach the desired purpose.

## 5. Reviewing specialist literature

To reach the objectives set above, I relied on the Hungarian and foreign specialist literature that served as an excellent base to conduct the research on my own and draw well-considered conclusions.

I used 208 specialist works for my paper with concrete references. Of course, the topic needs a wider scope of information that I provided by means of my research work and publications to reveal the connections between the significance, applications and topicality of longitudinal examinations as I think it is extremely important to trace down all the changes in the management of agricultural small-scale enterprises, for which one of the possible methods can be panel examination.

## 6. Method of processing

I have presented and evaluated the methodology of processing within which I have specified the databases used. I used one of the methods of longitudinal examinations, the panel examination that I termed as development or change successive examination which is more logical in the Hungarian language. The mathematical correlations of this can be described by the formulas stated below:

The farms were entered into a cell of the table after careful identification on the basis of the size of the area they possessed during the examined $t$ period (lateral column) and $t$+1 period (head column). This way the farms that had an approximately similar size in the examined $t$ and $t$+1 period, i.e. they kept it at the same level are indicated in the diagonal of the table. The farms that increased their area from date $t$ to $t$+1 are above the diagonal and those that decreased it are below the diagonal. In both cases the size and extent of the

changes in the area could be traced back. Of course, the examination can be continued form year to year but the changes of a longer period can also be analysed easily (GUNDEL–LACZKA, 1995).

The frequencies inserted in the contingence table can clearly indicate non-random spread without the application of more serious mathematical-statistical methods.

The spread of occurrences of Table 1 in percentage reflected to principal $\Sigma Z_{xiyi}$ in the diagonal of the error range (downwards form left to right) shows the proportion of the units (components) whose examined feature or size did not change between the two dates. The extent of criterion decreased in the case of the components below the diagonal from the previous (t) time to t+1 time while the extent of those above the diagonal increased. By contracting the columns the assessment of the result can be simplified according to Table 2 by highlighting the extent of decrease, increase and invariability (similarity) per category and in total.

*Table 1:* **The spread of components on the basis of the size categories of the criterion 1.**

| **t+1** time / **t** time | | | classification of criterion | | | | for time **t** | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | $x_{1ah}$-$x_{1fh}$ | $x_{2ah}$-$x_{2fh}$ | $x_{3ah}$-$x_{3fh}$ | $x_{nah}$-$x_{n\infty}$ | | | |
| | | | occurrence of components | | | | $\mathbf{Z_t}$ | $\mathbf{Y_t}$ | **(y/z)** |
| classification of criteria | $y_{1ah}$-$y_{1fh}$ | occurrence of components | $z_{x1y1}$ | $z_{x2y1}$ | $z_{x3y1}$ | $z_{xny1}$ | $\Sigma\ \mathbf{z_{y1xi}}$ | $\Sigma\ y_1$ | $\bar{y}_1$ |
| | $y_{2ah}$-$y_{2fh}$ | | $z_{x1y2}$ | $z_{x2y2}$ | $z_{x3y2}$ | $z_{xny2}$ | $\Sigma\ \mathbf{z_{y2xi}}$ | $\Sigma\ y_2$ | $\bar{y}_2$ |
| | $y_{3ah}$-$y_{3fh}$ | | $z_{x1y3}$ | $z_{x2y3}$ | $z_{x3y3}$ | $z_{xny3}$ | $\Sigma\ \mathbf{z_{y3xi}}$ | $\Sigma\ y_3$ | $\bar{y}_3$ |
| | $y_{nah}$-$y_{n\infty}$ | | $z_{x1yn}$ | $z_{x2yn}$ | $z_{x3yn}$ | $z_{xnyn}$ | $\Sigma\ \mathbf{z_{ynxi}}$ | $\Sigma\ y_n$ | $\bar{y}_n$ |
| **t+1** | $\mathbf{Z_{t+1}}$ | | $\Sigma\ \mathbf{z_{x1yi}}$ | $\Sigma\ \mathbf{z_{x2yi}}$ | $\Sigma\ \mathbf{z_{x3yi}}$ | $\Sigma\ \mathbf{z_{xnyi}}$ | $\Sigma\ \mathbf{z_{xiyi}}$ | $\Sigma\ y_i$ | $\bar{y}_i$ |
| for time | $\mathbf{X_{t+1}}$ | | $\Sigma\ x_1$ | $\Sigma\ x_2$ | $\Sigma\ x_3$ | $\Sigma\ x_n$ | $\Sigma\ x_i$ | | |
| | **(x/z)** | | $\bar{x}_1$ | $\bar{x}_2$ | $\bar{x}_3$ | $\bar{x}_n$ | $\bar{x}_i$ | | |

From: own compilation

where: - **t** *and* **t+1** *are successive dates and criterion* **x** *is identical with* **y***;*

- $\mathbf{x_{1ah}}$-$\mathbf{x_{1fh}}$ *the upper-lower first class marginal value of the criterion of the component at date* **t+1** *which is <u>the same</u> time* **t** *in the longitudinal examination with* $\mathbf{y_{1ah}}$-$\mathbf{y_{1fh}}$;
- **z** *is the number of the occurrence of components (units) in the size categories of* **x** *and* **y***;*
- $\mathbf{Y_t}$ *and* $\mathbf{X_{t+1}}$ *is the total amount of criteria reflected to the given time;*

With the arrangement of the data summarising the changes of the features of the farms between the two dates in the chronological order of the series of survey into a table (Table 3), the changes from time to time can be reviewed much easier and the partial results can be made more understandable with graphical designs. (The decrease of components resulting from the method of examination can be presented in a separate column in the summarising tables).

*Table 2:* **The spread of components on the basis of the size categories of the criterion 2.**

| **t+1** time / **t** time | | The change of components from time **t** to time **t+1** according to the criterion | | | $\Sigma Z_t$ |
|---|---|---|---|---|---|
| | | **less** (a) | **similar** (b) | **more** (c) | |
| $y_{1ah}$-$y_{1fh}$ | occurrence of components | - | $z_{x1y1}/\Sigma z_{xiyi}$ | $z_{x2,3,n\ y1}/\Sigma z_{xiyi}$ | $\Sigma \mathbf{z}_{y1xi}/\Sigma z_{xiyi}$ |
| $y_{2ah}$-$y_{2fh}$ | | $z_{x1\ y2}/\Sigma z_{xiyi}$ | $z_{x2y2}/\Sigma z_{xiyi}$ | $z_{x3,n\ y2}/\Sigma z_{xiyi}$ | $\Sigma \mathbf{z}_{y2xi}/\Sigma z_{xiyi}$ |
| $y_{3ah}$-$y_{3fh}$ | | $z_{x1,2\ y3}/\Sigma z_{xiyi}$ | $z_{x3y3}/\Sigma z_{xiyi}$ | $z_{xny3}/\Sigma z_{xiyi}$ | $\Sigma \mathbf{z}_{y3xi}/\Sigma z_{xiyi}$ |
| $y_{nah}$-$y_{n\infty}$ | | $z_{x1,2,3\ yn}/\Sigma z_{xiyi}$ | $z_{xnyn}/\Sigma z_{xiyi}$ | - | $\Sigma \mathbf{z}_{ynxi}/\Sigma z_{xiyi}$ |
| $\mathbf{Z_{t+1}}$ | | $\Sigma \mathbf{z_a}/\Sigma z_{xiyi}$ | $\Sigma \mathbf{z_b}/\Sigma z_{xiyi}$ | $\Sigma \mathbf{z_c}/\Sigma z_{xiyi}$ | **1** |

From: own compilation

*Table 3:* **The directions of the change of criterion**

| **time** | the proportion of the change of components from date to date according to the criterion | | | the proportion of missing components between $\mathbf{t_{n-1}}$- $\mathbf{t_n}$ | **Total** |
|---|---|---|---|---|---|
| | **less** | **similar** | **more** | | |
| **t+1** | $\Sigma \mathbf{z_a}/\Sigma z_{xiyi}$ | $\Sigma \mathbf{z_b}/\Sigma z_{xiyi}$ | $\Sigma \mathbf{z_c}/\Sigma z_{xiyi}$ | $\Delta\mathbf{Z}/\Sigma z_{xiyi}$ | **1** |
| **t+2** | $\Sigma \mathbf{z_a}/\Sigma z_{xiyi}$ | $\Sigma \mathbf{z_b}/\Sigma z_{xiyi}$ | $\Sigma \mathbf{z_c}/\Sigma z_{xiyi}$ | $\Delta\mathbf{Z}/\Sigma z_{xiyi}$ | **1** |
| **t+3** | $\Sigma \mathbf{z_a}/\Sigma z_{xiyi}$ | $\Sigma \mathbf{z_b}/\Sigma z_{xiyi}$ | $\Sigma \mathbf{z_c}/\Sigma z_{xiyi}$ | $\Delta\mathbf{Z}/\Sigma z_{xiyi}$ | **1** |
| **t+4** | $\Sigma \mathbf{z_a}/\Sigma z_{xiyi}$ | $\Sigma \mathbf{z_b}/\Sigma z_{xiyi}$ | $\Sigma \mathbf{z_c}/\Sigma z_{xiyi}$ | $\Delta\mathbf{Z}/\Sigma z_{xiyi}$ | **1** |
| **t+n** | $\Sigma \mathbf{z_a}/\Sigma z_{xiyi}$ | $\Sigma \mathbf{z_b}/\Sigma z_{xiyi}$ | $\Sigma \mathbf{z_c}/\Sigma z_{xiyi}$ | $\Delta\mathbf{Z}/\Sigma z_{xiyi}$ | **1** |

From: own compilation

I carried out the secondary processing of several publicly accessible databases and the data of the CSO at my disposal together with the analysis of the primary database of my own compilation. The survey embraced the single small-scale producers (private farms) of Heves county previously designated by the CSO. When choosing the sample, it was

extremely important that the farms should presumable be able to maintain themselves in the future and carry out their activities. The own survey was also conducted by means of a questionnaire. Altogether I processed the data series of 15 years paying attention to the fact that the same farms should enter the sample, which is the basic condition of the method I applied.

The survey was repeated 8 times during the examined period whose data were arranged in the table by means of a mathematical model presented in the methodological part of my dissertation. For the applied method I used SPSS for Windows programme.

## 7. Results

The number of the examined farms decreased similarly to the national tendency. While reviewing the regional spread, I concluded that termination was in close connection with the endowments of the production area. Part of the agricultural income of small-scale enterprises (50%) derives from the workplaces, which decreases in time. Farm stability is based on inheritance and the basis of former small-scale enterprises and with the termination of large-scale enterprises the cooperating small-scale ones lost ground.

The farms of the sample reached their size in 1992 in 60% due to privatisation and compensation. Regarding the type of farming, the mixed version is dominant due to the unfavourable endowments of the production area in the county and those involved only in animal husbandry stopped operation. The proportion of animal husbandry and crop plant production increased in the production structure but the decrease of the proportion of the so-far significant vegetable and grape production is a cause of concern. 20% of the claims for compensation were in one's own right and in 75% land was the basis of compensation that was primarily used for purchasing land. Concerning credit, I experienced that initially farmers had been asking for a loan on things where reduction was available such as purchase or building of real estates. Till 1994-2003 the purchase of machinery was gradually preferred. In 2004 the sum spent on machinery was significantly reduced (66% of the previous year) due to the EU regulations on machinery support.

This process was stopped by 2005 when the conditions of farming were transformed so that the farms could not implement simple reproduction, either due to the high repayment

charges of the loan. Furthermore, the reduction in the above-mentioned support also played a decisive role. The high degree of indebtedness can incur the decrease of employment in agriculture and the concentration of areas of land.

The occupation of 50 % of the farmers examined were the same as their fathers', meanwhile it corresponded only in 20-25% to the job of their grandfathers' with the exception of individual farmers (31%-31%, respectively).

The majority of the active farmers are full-time worker. During the past one and a half decades, the bulk of the labour force employed elsewhere retired so the number of full-time agricultural workforce has risen by 30%. The fact that the young did not want to be engaged in agriculture any longer perfectly highlights its grave difficulties, problems by making its situation bleaker.

The examination of farmers by age also supports this fact. The youngest generation (aged 34-35) is no longer involved in agriculture after 1994. Ageing is typical.

Regarding qualification, the situation is even worse as on a national level the proportion of those with higher education is 7%- in the examined farms there are no such people, and the number of those with secondary education only rose by 8% to 30% within 15 years. Nearly 70% of the farmers had no agricultural qualification at all.

I would think this situation is critical if Takátsy et al. (2006) had not concluded an even more unfavourable result.

I think that regarding the present situation of agriculture, only well-qualified professionals with higher education can cope with the challenges created by the EU. The average amount of work fluctuates between 161-180 days/person/year but, of course, it depends on the weather-especially in the case of plant production.

The number of workers per farm grew by one-third in general, which can be due to the increase in the size of the farm as well as the fact that branches requiring manual labour have gained ground. The proportion of family members working on the farm has totally been restructured and not only the child but also the grandchild help.

I think it is necessary to support the simple and cheap employment of casual workers not registered by the state because of the campaign work. It is true that this way payment "from pocket to pocket" cannot be stopped that is mostly typical of black, illegal employment in the branches of vegetable, fruit and grape mainly and is almost impossible

to whiten it under the present price-cost relations but it can mean headway as the low profitability of the branch will not be facilitated by the regulation changes in the present conditions of employment.

During the course of examining the changes in the size and ownership of areas I deduced how the "longitudinal tables" used to assess the panel examinations applied can show the changes in their process and the dynamics of relations. I concluded that the proportion of farms below 1 ha was the biggest at the beginning of the examined period. The average size per farm was about 5 ha that landed on 84 ha by the end of the one-and a half decades besides the dominance of 30-100 ha or bigger farm sizes. This concentration took place primarily with the increase of leasehold and the proportion of leased and own land was almost 50-50%. The question of leasehold can arouse serious problems in the branch till permanent leasehold is not formed. I agree with Kapronczai (2006) that not only the maximum of leasehold (20 years) should be regulated in the land law but also the minimum period of lease (e.g. 5 years). This type of leasehold system would protect the interest of farmers the best. The formation of the production area used by the examined farms shows the same tendency as do the national and Heves county data of private enterprises.

Regarding methodology, the national data collection and longitudinal processing have brought up two very interesting problems. One of them is to ensure the identity of the components of the surveyed sample- although as the rule of big numbers says that the well-determined representative sample should have the same spread- another is that during the examination based on the category of area size, the farms that have no area should not be included or they should be handled separately like I did in the case of those that stopped operating.

The sowing structure of the examined crop producing agricultural small-scale enterprises has significantly been modified during the 15 years of the examination. From 1994 the branch of maize and wheat has been decisive (51%). It is interesting to note that as a result of change-successive examinations many farmers started to produce wheat on land that was gained back as a result of privatisation in 1992 and typically if maize was not produced by the beginning of the period neither was it later. The proportion of the sowing area of industrial plants doubled in which sunflower dominates with a share of 70-90%.

Forage was grown on 11-13% of the area which is in close connection with animal husbandry and keeping animals (cattle, sheep) that feed on fodder on the mixed type farms. The area of vegetables was reduced to its one-tenth. The vegetable growing practices of these farmers are characterised by cycles of 3-4 years.

In Heves county and in the case of the farms examined the production of watermelon is decisive. As a result of the examination of grape-and fruit production we can see that as the endowments are not suitable for fruit production, nobody was engaged in it in 2003 among the examined ones. Grape and wine production has a great tradition in Heves county as two of the wine regions of Hungary, namely Eger and Mátra can be found here. Among the farms involved in the examination only the two biggest ones survived who were able to develop by means of support (8-12.5 ha/farm).

In all the examined branches the concentration of land can be noticed- incurring the concentration of capital, which is favourable and desirable. However, I think that the extent of concentration has not reached the size that would make the production of homogenous product of good quality in bulk possible and thus it cannot solve the emerging logistical problems. That is why in concord with the renowned specialists of this profession I also think the foundation and running of producing-selling co-operations and production groups are indispensable. I think the greatest volume of income can be made if the total channel is implemented from production via processing to final sales. According to the farmers, plant production is still more profitable than animal husbandry- although the first one stiffens production structure. They mentioned mixed farming as the most favourable type.

Reviewing animal husbandry we can conclude that from 1991 to 1996-97 the stock of animal husbandry decreased to a greater extent than the area of plant production. The decrease in animal husbandry went along with the decrease in the proportion of the crop land and the proportion of grasslands not utilised grew. In the examined farms from 1991 to 1994 the number of all the four kinds of animals involved in my examination decreased, in the case of hens and pigs to their half. The shrinkage of these two branches continued by the millennium. I found some increase only in the case of sheep and cattle keeping in 3-10%. By 2005 only sheep rose (by 3%). The reason for the continuous decrease of pig keeping can be found in the lack of capital and disorganisation as well as

it was also affected by forage and sales prices. Small-scale producers reacted to these changes more sensitively than business organisations. Regarding profitability, this branch was continuously losing its profit till in 2005 there were only farms in the red or with null balance. The number of cattle keeping farms decreased by 8 thousand on a national level from 2000 to 2005. Kapronczai et al. (2005) experienced that "specialisation started 2-3 years ago in the branch but there was no significant change or move". The number of those keeping a few animals decreased nationally but we cannot talk about serious concentration. The steady increase dropped in 1999-2000 due to the high prices of forage in relation to low sales prices, in which I agree with Zacher (2000). As a result, farmers could not compensate themselves for the increasing costs with the sales price. 3-5% of the farmers are engaged in sheep keeping, which is extremely low when compared to the area of grassland. As we stated in our publication with Nábrádi (2007), the situation of sheep keeping is rather contradictory. Producers do not make use of development possibilities such as widening the range of products. Support cannot solve everything. The examined farms increased their stock in relation to the national tendency. The sign of concentration can be discerned although the biggest size category is between 21-50 sheep that cannot be regarded as a flock.

At the beginning of the examined period the concentration of keeping hens was high enough but after that deconcentration took place both in the case of the examined farms and at a national level. In the case of poultry and pig keeping the branch is not tied to a forage producing area so it can react to changes more sensitively.

Another important factor is the relatively short reproducing period of these species.

Support is suggested as a solution to the difficult situation of animal husbandry by most of the specialist books. In my opinion extensive keeping could ensure producing good quality products by the traditional varieties besides area utilisation, which is in compliance with the regional-and environmental standards expected in the EU.

The liquidation of farms has various reasons. I had similar experience in the case of the examined farms than the result of the national survey.

We can ask the following question: why is it important to disclose the reason of liquidation?

My answer seems to be obvious: if the purpose is retaining the rural population and ensuring their basic needs, then decisions can be made to enhance the population-retaining capacity of the countryside by facilitating the protection and taking care of the region and what is more, the increase of unemployment in crowded cities should be stopped or avoided. My applied examination method does not only have a role in the preparation of decisions making but also in monitoring and controlling if we reached the desired effect afterwards.

## 8. Conclusions, findings

As a result of the longitudinal examination I concluded that the number of farms had decreased and only those viable and capable of increasing their area survived and operate even today. Farm stability greatly depends on if it is based on inheritance or the foundations of a previous farm. Most of the active farmers are employed full time. Nearly 70% of the farmers have no agricultural qualification. Regarding the type of farming, those of mixed structure are the most viable ones, which are based on own and leased land.

When reviewing regional spread, I found that liquidation was in close contact with the endowments of the production area. 60% of the farms of the sample reached their size of 1992 due to privatisation and compensation.

Those engaged in only animal keeping were terminated due to the market changes.

The proportion of animal husbandry and crop plant production increased in the production structure but the decrease of the proportion of the so-far significant vegetable and grape production is a cause of concern. 20% of the claims for compensation were in one's own right and in 75% land was the basis of compensation that was primarily used for purchasing land.

Concerning credit, I experienced that initially farmers had been asking for a loan on things where reduction was available such as purchase or building of real estates. Till 1994-2003 the purchase of machinery was gradually preferred. In 2004 the sum spent on machinery was significantly reduced (66% of the previous year) due to the EU regulations on machinery support.

This process was stopped by 2005 when the conditions of farming were transformed so that the farms could not implement simple reproduction, either due to the high repayment charges of the loan. Furthermore, the reduction in the above-mentioned support also played a decisive role. The high degree of indebtedness can incur the decrease of employment in agriculture and the concentration of areas of land.

Based on my examinations, I concluded that longitudinal examinations are the best to implement the decision-making, preparing, data collecting, processing and analysing possibilities as well as monitoring the aftermath of the decision whether it has reached the desired objective while serving the sustainable development of agriculture can be realised in the simplest, most up-to-date way with the smallest financial sacrifices.

The method is able to furnish information on both micro-and macro- level in the desired breakdown, groupings and relations.

I have reviewed the data collection practice of this kind in the countries with developed agriculture and on the basis of this, I can recommend its adaptation to domestic conditions. Of course, it would be a great burden if it were implemented only by one data providing organisation so I think it is important to include professional organisations that are in daily contact with the farmers.

The change successive method (panel examination) that I applied is suitable both for founding decisions on great areas and monitoring the aftermath of their effects- due to integration and distribution.

## 9. New and novel scientific results

1. Relying on domestic and foreign paper-and Internet-based specialist literature, I have defined change or development successive (longitudinal) examination in my own interpretation. Change (development) successive examination: describes quantitative and/or qualitative changes in their process and relations in dynamics and development despite the traditional static examinations.
2. I have concluded that my applied method was much simpler than the other procedures used before so the frequencies inserted in the contingence table can clearly indicate non-random spread without the application of more serious mathematical-statistical methods.

3. As a result of longitudinal examinations, I concluded that:

—the number of farms has decreased, only those above 5 ha are operating even now.

— farm stability greatly depends on if it is based on inheritance or the foundations of a previous farm.

— most of the active farmers are employed full time. The proportion of those with special qualification is critically low.

— regarding the type of farming, those of mixed structure are the most viable ones which are based on own and leased land.

— when reviewing regional spread, I found that liquidation was in close contact with the endowments of the production area.

— 60% of the farms of the sample reached their size of 1992 due to privatisation and compensation.

— those engaged in only animal keeping were terminated due to the market changes.

— the proportion of animal husbandry and crop plant production increased in the production structure but the decrease of the proportion of the so-far significant vegetable and grape production is a cause of concern.

— concerning credit, I experienced that initially farmers had been asking for a loan on things where reduction was available such as purchase or building of real estates. Till 1994-2003 the purchase of machinery was gradually preferred. In 2004 the sum spent on machinery was significantly reduced (66% of the previous year) due to the EU regulations on machinery support.

This process was stopped by 2005 when the conditions of farming were transformed so that the farms could not implement simple reproduction, either due to the high repayment charges of the loan. Furthermore, the reduction in the above-mentioned support also played a decisive role.

— based on the things above, we can state that a not well-considered support regulation (support policy) can affect certain components of agriculture in a negative way, can extract capital from the branches and groups of producers

concerned thus preventing those otherwise in a difficult situation from recovering from the drift towards the crisis.

— the high degree of indebtedness can incur the decrease of employment in agriculture and the concentration of areas of land.

4. Based on my examinations, I concluded that longitudinal examinations are the best to implement the decision-making, preparing, data collecting, processing and analysing possibilities as well as monitoring the aftermath of the decision whether it has reached the desired objective while serving the sustainable development of agriculture can be realised in the simplest, most up-to-date way with the smallest financial sacrifices.

   The method is able to furnish information on both micro-and macro- level in the desired breakdown, groupings and relations.

5. I have reviewed the data collection practice of this kind in the countries with developed agriculture and on the basis of this, I can recommend its adaptation to domestic conditions. Of course, it would be a great burden if it were implemented only by one data providing organisation so I think it is important to include professional organisations that are in daily contact with the farmers.

**10. Suggestions to be implemented in practice**

I present the form of suggestion proposed by the Dutch among the countries with developed agriculture. The local offices of the Ministry of Agriculture have to report the special features of changes where changes in the registration occur. There are 35 codes available to identify changes. This is the basis for public information recording. However, by means of this information we can decide if the information of the census that was published under different registration numbers in successive years refers to the same business unit. This procedure makes the analysis of changes possible for a long time based on the farm. The 140 points of the agricultural census have remained unchanged for several years. The most suitable approach could be the installation of a database of individual census data for several years for the business units whose number is gradually decreasing. This has not been implemented yet.

Due to practical reasons, the data of the census are summarised in 40 steps and most of the analysis are carried out on files containing data of two years. Since 1992 the register has been automated. This made it possible to note the reasons of changes (by adding one of the 35 code numbers) at the same time of the change. This way the whole range of registered data is accessible any time and there is no need to compare the data of two censuses to disclose the changes in the register.

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