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Certain elements of population retaining ability and the ability to economically provide for a population of the countryside

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Summary: According to the data of population density, most of Hungary's territory has rural features. Achieving EU supports in order to focus on developing the most underdeveloped communities, and in order to lessen the differences between communities, to establish priorities and to determine the rank of rural communities based on their development potential is necessary. The need of measurability arises because of comparison and classification. A possible target area is an analysis of population retaining ability and the ability to economically provide for a population of rural areas.

Introduction

Research past and present has focused on analyzing competitiveness. Studies investigating the population retaining ability and the ability to economically provide for a population are less typical. Also, the expression itself is quite new; it was born parallel with the evolution of such problem as national migration or the decreasing role of agriculture in income production. More precisely, it developed as soon as the demand to solve the problem, i.e. the increasing of the population retaining strength, as well as the ability of agriculture to economically provide for a population, emerged (in the 1980s). Since then, the use of the expression has become popular among researchers. Unfortunately, it is difficult to find national publications in this topic. Foreign authors can only indirectly be engaged into this topic, by studying the reasons behind migration. The most important domestic and foreign researchers are the followings: Tóth (1982), Sántha (1983), Csatári (1986), Konkolyne Gyuró (1991), Tóth (1991, 2006), Dorgai (1991, 1998), Fekete (1997), Fehér (1998), Romány (1999), Magda. (2000), Hamza (2006); Ginsberg, (1998), McGranahan, (2002), Beale, (2002), Epstein, (2001), Lesley, (2003), Hanson, (2003).

In addition to the low amount of literature, it is difficult to ascertain any agreeable definition which embodies the terms population retaining ability and the ability to economically provide for a population. I found only one definition in the research of Csatári (1986), who interpreted the population retaining ability as the aggregation of different abilities; the most important of which is the *biological reproduction ability* of the population. This ability refers to the demographic structure, the age structure, the natural reproduction, the immigration and out-going migration of a given community. Another important factor is the *ability to economically provide for a population*, i.e. the income-

producing ability of the communities, which depends on the rate of employment, its supply and structure. The third determinant is the *ability of supply*, thus the living conditions, while the fourth element is the *emotional affection of those living in communities*. The lack of this last factor influences the retaining ability the most heavily.

To gain adequate, many-sided information with the aim of defining the development potentials of a community, micro-region or a region, it is essential to make a complex status evaluation and to complete the information gained from statistical surveys with empirical investigation and subjective evaluation. Population retaining ability also has economic, social and ecological-environmental relevance; the examination of development potentials, on the community or regional levels, should be completed by considering population changes – as a reaction of the inhabitants to what is happening in the community or in the region. In every case, the aim is to recognize the present situation by determining the direction of the change, and finally to predict development.

Generally used indexes/indicators for carrying out such investigations have not been developed yet. The European Union, from the OECD sample, created its indicator stock for evaluating environmental state, also in the area of rural development indicator systems measuring community, or regional development potential can be achieved, however there cannot be found any uniform, cleared-out, easy to apply models.

My objectives were the following: (1) to make the definitions of population retaining ability and the ability to economically provide for a population more complex; (2) to develop indicators, in order to compare economic, social and ecological-environmental conditions, situations and tendencies of communities, subregions and regions; as well as (3) to construct a model based on indicators that may serve as a basis for national and international surveys, to assist in

developing complex plans, and to thereby ensure sustainable development.

Applied research methods

The research was based on secondary and primary data collection. The **secondary data collection** was aimed at **creating** a fact-type **indicator stock** suitable for investigations at a community level. To do this, I collected data on the target area, the Statistical Subregion of Püspökladány, for the period between 1999 and 2004, from different sources of the Hungarian Central Statistical Office (HCSO). I used the indicators from statistical sources for investigating population retaining ability. To do this, I classified the communities of the sub-region into 4 groups, considering the tendency and rate (decreasing or increasing) of population change. This made analyzing state-survey of the studied area based on population change, and revealing causes of population retaining ability possible.

I based the supplementation and strengthening of the secondary data collection on **empirical information**. Within primarily research, I used quantifying methods by constructing three types of questionnaires. For supplementing and

justifying fact-type data with opinion-type data, as well as investigating population retaining ability on the basis of subjective evaluations, I constructed a questionnaire for the population and workers at local governmental offices. The questions for the local governmental workers serve the strengthening, control and, in certain cases, the supplementation of the questionnaires for the population, thus the questions in it are related to the questions for the population. I constricted the investigation of **the ability to economically provide for a population** to the **agricultural sector**, due mainly to capacity limits. In order to avoid non-sufficient results, I excluded agricultural ventures (farming over 300 hectares) being out of private enterprises posterior. The reason is that very few farms (only 3) got into the sample, but because of their sizes, they significantly distorted the result, which hindered me from making adequate conclusions for the subregion. 87 private farmers were surveyed from all of the communities of the sub-region (*Table 1.*).

Because of the small element number, none of the surveys may be considered as representative.

I made the survey in May of 2006. My **minimal expectation** relating to filling out the questionnaires **was that every community should get into the sample**. *Table 1* represents the final number of questionnaires filled out.

I used the **SPSS 13.0 program** for processing the questionnaires; during evaluation, I used both descriptive and mathematical-statistical methods.

I calculated the total Standard Gross Margin (SGM)¹ of the farms by utilizing the available data in order to investigate the ability of agriculture to economically provide for a population, and I also determined the European Size Unit (ESU)² for defining the economic viability. I used two typologies for the calculation. One of the typologies is **the 146/2004 (IX.30.) Regulation of the Ministry of Agriculture and Rural Development on using standard gross margin values established within the test farm system in connection with rural developmental subsidies from the European Agricultural Guidance and Guarantee Fund (EAGGF) (FVM, 2004)**. The ESU values calculated from the SGM are used for determining the viabilities of farms,

Table 1.: Number of Questionnaires Filled Out in the Communities

Name of the community	The number of filled out questionnaires (piece)			
	Local governmental workers	Population	Agricultural producers	Altogether
Bárán	10	28	7	45
Bihardancsháza	2	8	4	14
Biharnagybajom	4	16	7	27
Bihartorda	10	17	7	34
Földes	10	25	6	41
Kaba	10	16	9	35
Nádudvar	12	30	8	50
Nagyrábé	9	20	9	38
Püspökladány	10	26	7	43
Sáp	3	15	6	24
Sárrétudvari	6	9	6	21
Szerep	2	13	5	20
Tetétlen	6	14	6	26
Together	94	237	87	418
Filled-in but inestimable	0	11	3	14
Altogether	94	248	90	432

Source: own investigation

¹ **Standard Gross Margin (SGM):** a normative (relating to average weather and farm conditions) gross margin determined primarily to the single size unit (1 hectare, 1 animal) of agricultural productions. (The gross margin is the difference between the production value of the agricultural production and the related variable costs.) The SGM per unit of production activities multiplied by the size of the activity in the given firm and to sum up the products result in the total SGM of the farm. This value reflects the permanent profit producing capacity of farms in accordance with assets, production structure and production conditions. In this way, it can even be used for determining the economic size of a farm (*Keszthelyi, 2006*).

² **European Size Unit (ESU):** 1 ESU equals with 1200 EURO (306 thousand HUF), of the total SFH; its value may be sometimes modified by the inflation (*Varga, 2006*).

which is one of the conditions to win EU subsidies, such as Subsidizing Agricultural Investments within the Agriculture and Rural Development Operational Program. The limit of the economic viability (ensuring the livelihood of a family) is 5 ESU (Nagy, 2006; Varga, 2006), thus I also utilized this limit in my investigations. I made a further correlation examination using the calculated SGM and ESU values.

The Agricultural Economics Research Institute (AERI) utilizes a so-called EU-typology within the Farm Accountancy Data Network (FADN) for analyzing test farms production, which is suitable for carrying out research on the basis of economic farm size (by calculating SGM) and production tendency. The AERI placed the typology software for 2006 at my disposal, which ensured the comparativeness with the national results and correlation investigations of the created farms size for the 87 investigated farms.

System of population retaining ability

I constructed the system in connection with population retaining ability and the ability to economically provide for a population on the basis of the environment analyzing model used by the European Environment Agency and adapted from the impact-state-response model serving the conception basis for **OECD** environment performance evaluation (Figure 1.). This applies the so-called **DPSIR** (Drivers-Pressure-State-Impact-Response) system.

- The group of *Drivers* consists of human activities, such as macroeconomic processes, energy, transportation, industry, agriculture, tourism, consumption, population growing.
- The *Pressure* contains the utilization of natural resources, environmental pollution, environmental processes, poisonous materials, data relating to communities and waste output.
- The *State* is the situation, which comes from the pressure of environmental and natural resources. Data with respect to atmospheric process, environmental elements (humans as well) and natural resources.
- The indicators of *Impact* relate to biological and physical systems involving human health, safety of ecosystems, breeding animals and crops, agricultural ecosystems, state of buildings.
- The *Response* is measures in order to reduce and eliminate harmful impacts. It involves data relating to economic and environmental factors, such as business administration, households, ventures, environment safety and international co-operation (KGI, 1997; Katonáné Kovács, 2004).

On the basis of these, **Drivers ("D")** and **Pressure ("P")** can be classified into economic, social and ecological-environmental factors according to the three functions of rural areas.

The **State ("S")** is the population retaining ability, **an already existing complex situation in a given period of time, as the community as a whole operates in a certain**

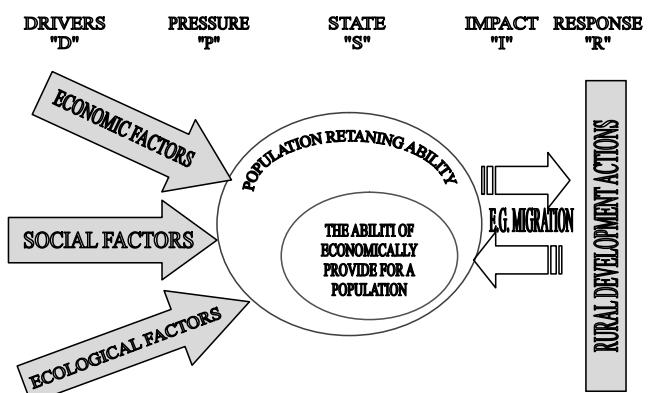


Figure 1.: The System of Population Retaining Ability and the Ability to Economically Provide for a Population
(Source: own figure)

moment, which evolves as the aggregation of impacts and due to their pressure. Agreeing with Csatári (1986), I find it also as the **aggregation of different ability and conditions**. I deal with the *ability to economically provide for a population* in a highlighted way, as according even to the previously mentioned research, it primarily influences the population retaining ability of a community, thus this is illustrated separately in the figure (Figure 1.). The ability to economically provide for a population is determined by the role of certain economic branches played in the economy of the population. In this way, they influence the safe livelihood, employment and raising income of the population to a different degree. It operated properly, if job supply and job demand are in harmony with each other, that is if job creation and employment is based on local conditions (natural conditions, labour supply) and traditions. In my opinion, the *biological reproduction ability* is both a state and an impact. (I rather prefer the second one that is it can be considered as an impact). As the age structure depends on the willingness to give a birth, thus the number of birth, which is influenced by the economic-social state, and the population retaining ability. Furthermore, it depends on the number of deaths, which is primarily a state; though losing jobs may cause health problems, which may result in natural death or even suicide. The age structure is influenced by the migration, too, which to my mind is the result of the population retaining ability. The third one is the *ability of supply*, which means that how a community can meet the demand of the population and ensure proper livelihood. It contains infrastructural conditions and different services. One of the most important features of the population retaining ability is the role of those living in the community, *devotion*, emotional affection and being aware of identity of *people living in villages*, which influence the migration willingness to a great extent as well. The fifth condition is the prevailing *political state* influencing historical processes, too. It has a dominant role both at a global (at a national level) and at a local level (operation of local governments). In my opinion, from the point of view of the community it is a state that what kind of rural developmental, regional and community

developmental policy is carried out by the government, and furthermore, how the local governments can adapt all these. I consider the *ecological-environmental well-being* playing a more and more important role as the state of the population retaining ability, which is the aggregation of the natural, environmental and built environmental state being present by the drivers.

The **Impact („I”)** is the migration in this situation, which can be two-sided. In case of favourable population retaining ability of a community that is as favourable impact of influencing factors, immigration can occur, while an unfavourable case may cause emigration. The biological reproduction ability can be considered as an impact, as I mentioned earlier.

Response (“R”) is rural developmental and other developmental measures for improving population retaining ability.

The elements of the system are not independent from each other; one or several of them determine the others. This means, furthermore, that the evolved pressure or state may be even drivers in other relation.

Results and their evaluation

The Püspökladány sub-region consists of 13 communities, three of which are towns. Altogether, 51 989 people live on the 95 491 hectare-sized sub-region; the population density is 54 persons per km². 60% of the population lives in the three towns, and this ratio has not changed since 1990. Comparing the population of each community to the whole population in the sub-region, it is clear that 30% of the population is concentrated in the centre of the sub-region, in Püspökladány, while less than 0,5% of the population lives in

Table 2.: Change in the Population of the Communities in the Subregion of Püspökladány (1990–2004)

Communities	Area (hectares)	Number of population		Change in the number of population (%)
		1990	2004	
Báránd	4256	2907	2700	-7,12
Bihardancsháza	831	235	209	-11,06
Biharnagybajom	6135	3008	2945	-2,09
Bihartorda	2238	1035	947	-8,50
Földes	6523	4598	4241	-7,76
Kaba	9503	6404	6454	0,78
Nádudvar	22591	8715	9265	6,31
Nagyrábé	8542	2573	2286	-11,15
Püspökladány	18695	16371	15747	-3,81
Sáp	1922	958	1049	9,50
Sárrétudvari	5442	3180	2990	-5,97
Szerep	5604	1413	1675	18,54
Tetéten	3211	1467	1481	0,95

Source: HCSO, 1991; HCSO, 2005; own calculation

the smallest community, in Bihardancsháza. 31% of the population lives in villages which have a population lower than 3000, which is 69% of the sub-region's communities. There are two communities in the sub-region with populations lower than 1000, of which one hardly exceeds 200 persons. The population of the sub-region has shown a continuous decrease since 1990 (2%).

Regarding Tóth's (1982) research, in order to analyze secondary data gained from different statistical surveys from the point of view of population retaining ability, **I created four groups on the basis of the change in population of the communities.**

1. *community group*: communities, where the number of the population increased and the ratio of the increase is higher than 1% (Nádudvar, Sáp, Szerep)
2. *community group*: communities, where the increase of the population is between 0 and 1% (Kaba, Tetéten)
3. *community group*: communities, where the number of the population decreased and its ratio is between 0 and -7% (Biharnagybajom, Püspökladány, Sárrétudvari)
4. *community group*: communities, where the decrease of the population exceeds even the -7% (Báránd, Bihardancsháza, Bihartorda, Földes, Nagyrábé)

When classifying the groups, I tried to keep in mind that **the differences between the changes in population of the communities belonging to one group should not be too high; furthermore, the communities should be classified into groups proportionately** (*Table 2.*). Next, I analyzed the data of the sub-region from secondary sources according to this classification, and I also use this to reveal certain correlations found when analyzing the questionnaires. I note that the low element numbers cannot be neglected when explaining the results.

I evaluate the results on the basis of the structure of “DPSIR”-system. This kind of structure, which separately handles the elements of the model (Drivers-Pressure-State-Impact-Response), is suitable for highlighting indicators, which otherwise would not be taken into consideration during a general evaluation. Furthermore, certain problems and data repeat but in different views. It is suitable for introducing system processes, revealing reason-effect correlations, by even focusing one indicator in the system. The analysis becomes more complex by featuring the secondary and empirical investigations next to each other and not separately. For example investigating the role of employment, going through the system, first I examine job opportunities, the structure of the active population in the given community (*drivers*), from which arising employment and unemployment (*pressure*), its consequence is the living standard (*state*), decisions and acts (*impacts*) of the inhabitants of the community, as well as measures for solving and may be for preventing problems (*response*).

I would like to call attention to the fact that I handle the population retaining ability and the ability of agriculture to economically provide for a population together, or rather in a parallel way. The dependence of the elements of the system on

each other and the classification of the utilized indicators depending on the investigation field is the reason of the fact that certain indicators gain different meaning in different relations (e.g. income is a pressure from the point of view of the population retaining ability, while it is a state in case of the ability of agriculture to economically provide for a population).

Drivers („D”) and **Pressure („P”)** as the first two elements of the system may be further structured; according to the three functions of rural areas, they can be divided into economic, social and ecological-environmental factors. In order to systematize the indicators belonging to these elements and to introduce them in order of importance, I took the opinions of the population and the local governmental workers into consideration.

The respondent should evaluate factors influencing life quality (population retaining ability) of their communities from 1 to 5. I evaluated the answers of the population and the local governmental workers together, as overlapping is out of question that is one person might fill out only one kind of questionnaire.

On the basis of the averages, I placed the factors into decreasing order, as well as I defined drivers **above an average of 4, as basically important factors**, and those having an average of less than 3, which have little influence on the population retaining ability according to the joint opinions of the respondents. Then I illustrated the result (*Figure 2.*). **I defined the basically important elements separately in the figure**, indicating their priorities. I did not illustrate factors getting a value of less than 3.

According to the respondents' opinions, the population retaining ability of the area is **primarily determined by economic and social factors** (as there is not any ecological-environmental factor among the basically important factors). There are four economic factors that should be highlighted; these are jobs and employment opportunities, income ensuring acceptable standard of livelihood, the operation of local governments of communities and the state of infrastructure in the community. The three most important factors of the social factors are the availability of health care, public security and schooling conditions.

During evaluating drivers and pressure, I regarded the orders of importance determined by the help of *Figure 2.*

Drivers

Drivers are external and internal conditions (economic, social, ecological-environmental), which determine basically the operation, state of a community and have an influence on the would-be development tendencies.

Pressure

According to my model, pressure contains factors and indicators that realized as a **consequence of the drivers**. In this way, pressure may be positive or negative, and **influence the realization of the state, the population retaining ability** (e.g. number of jobs is a driver in a community, while employment, commuting, unemployment, income, etc. are pressures.) Regarding the questionnaires, indicators relating to production (crop structure, breeding stock, revenue, aim of the production) are pressures in case agricultural farmers. In the case of the population survey, the enterprise feature of the qualification, employment, commuting, revenue sources of households, buying habits, opportunities to satisfy needs, as well as issues in connection with schooling of children belong to this category.

State

The state is **an already existing complex situation in a given period of time**, as the community as a whole operates in a certain moment, which evolves as the aggregation of impacts and due to their pressure. This is the income-producing capacity of the communities, the population retaining ability, and furthermore, the ability to economically provide for a population, which altogether contribute to the present situation of the population, influence their way of thinking, behaviors and decisions. It contains even the affection of villagers, the prevailing political condition and the ecological-environmental state. All these determine the population retaining ability of a population.

The **population retaining ability** of a community may be evaluated by the opinion, satisfaction and living standard of the population that is by subjective evaluation.

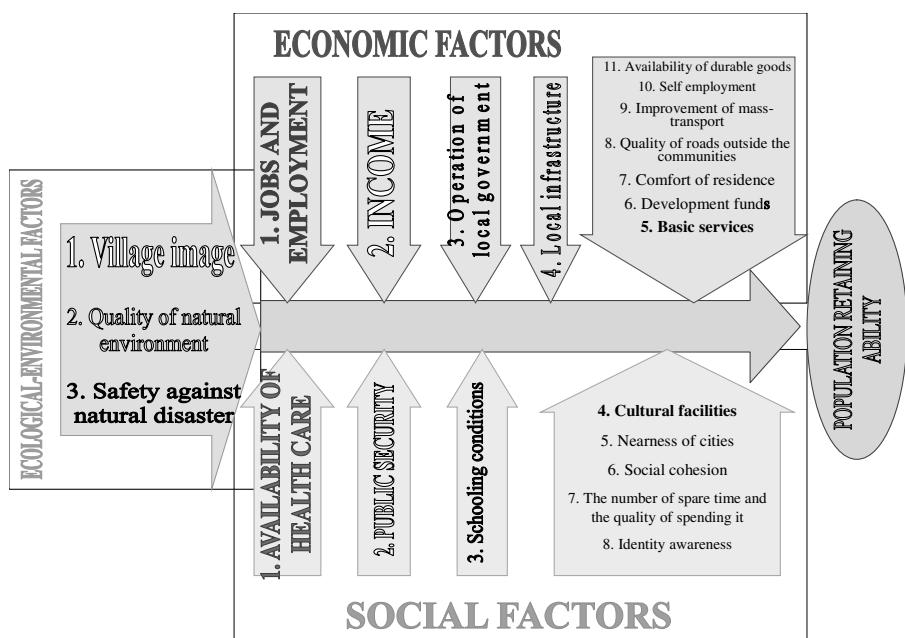


Figure 2.: Drivers and Pressure of Population Retaining Ability in the Subregion of Püspökladány (2006)
(Source: on the basis of own investigations)

The ability to economically provide for a population in case of the agriculture is the complex situation realized by the external and internal conditions (drivers and pressure), which may be concluded on the basis of investigating income producing ability. For determining the profit producing ability of the farms, I calculated the total Standard Gross Margin by using the available data and utilizing the two typologies, and then to determine viability, I evaluated the European Size Unit.

The ability to economically provide for a population contains even the revenue of the farm, the profit situation and living standard of producers' households in harmony with the profit producing ability. The revenue and profit belong to not the pressure, but to the state due to the features of the system (its elements are not independent from each other). I handled the agriculture separately; its indicators require other ordering principle, and in this case the ability to economically provide for a population means the state, which does not allow that I handle the revenue and profit separately.

Impact

The impact is the consequence of the state, of the population retaining ability. It can be characterized by demographical processes, such as migration difference, population increase, or the aging indicator. This is the reaction of the population to the positive or negative changes. Questions relating to changes, moving willingness of the respondents in the questionnaire for the population belong to here, while in the questionnaire for agricultural farmers, ideas for the future, willingness to co-operate, and the fact that what experiences the farmers have with respect to EU accession.

Response

The last element of the system is the response, which involves tasks relating to handling, preventing and solving the evolved situation and its impacts. This is the task of the local governments in the community in the sub-region, on the other hand, setting the problems, goals and the tasks should be determined in a bottom-up way, being in harmony with the conditions, taking the demand of the inhabitants into consideration, asking about their opinions, that is ensuring the participation of the inhabitants. Relating to agricultural farmers, response is every decision in connection with development, and the use of EU subsidies.

Results and the summary of their evaluation

To sum up the results, on the basis of data from the introduced secondary and primary examinations, it can be concluded that the sub-region is considered to be lagged behind from both economic and social aspects. Regarding the ecological-environmental factors, there are both

advantages and disadvantages (advantages are land quality, great ratio of nature conservation area, low number of infringements of lawful rights in environmental protection; disadvantages are ratio of forestry, the ratio of water network and sewage system, lack of recreational area, village image). **Communities of increasing population are more lagged behind than communities losing their population in many fields.** The attraction of these communities is not their developmental level or the fact that they serve better livelihood for their inhabitants. Those who move into these communities, primarily gypsy families, choose these communities as their home in hope of cheaper livelihood and due to the extremely low real estate prices. The "lumpen-proletarianism" going with general impoverishment is still an existing problem; it is not just the typical process of the period of the change of regime. It should be noted here, that this is about villages being lagged behind but having an increasing population. The exception is Nádudvar.

With respect to population retaining ability, I can conclude that there is not always a correlation between the change of the number of the population and the population retaining ability of a community. That is, if the population increases, it does not mean the fact that its population retaining ability or its ability to economically provide for a population is better than in other communities. On the contrary, in certain cases it is even worse, that is why they attract poorer people. The hypothesis of the research is not justified in this issue.

All in all, the living standard of the inhabitants in the subregion is not sufficient; the majority has difficulties in making ends meet (Figure 3.). The reason is the employment of low standard, lack of jobs and income, which results in willingness to move and in aging population. The structure of the household revenues indicate the circumstances, from which pension and social-type subsidies, as well as buying habits with respect to food and maintaining the household have great ratio.

With contrast of these, it is a positive fact that the effort of the communities for ensuring local jobs is outstanding, the conditions for basic education are given, many people like living in their community, in this way they are attached to it even emotionally.

To sum up the investigations relating to agriculture, it can be stated that farmers in the sub-region of Püspökladány are aging and carry out small-scale farming. The production structure is determined by primarily the traditions and markets both in crop production and animal breeding. The agricultural diversification is not typical in this area, the majority of the farmers gain profit from mainly the agricultural sector, which has to be supplemented by off-farm profit in case of small-scale farmers. The average profit production of the farm is 163% of the national average, however, that of smaller-sized farmers is worse, in this way their viability is not sufficient. In other words, the agricultural activity is a supplementary profit source for smaller-sized farmers.

The willingness to co-operate among the farmers of the

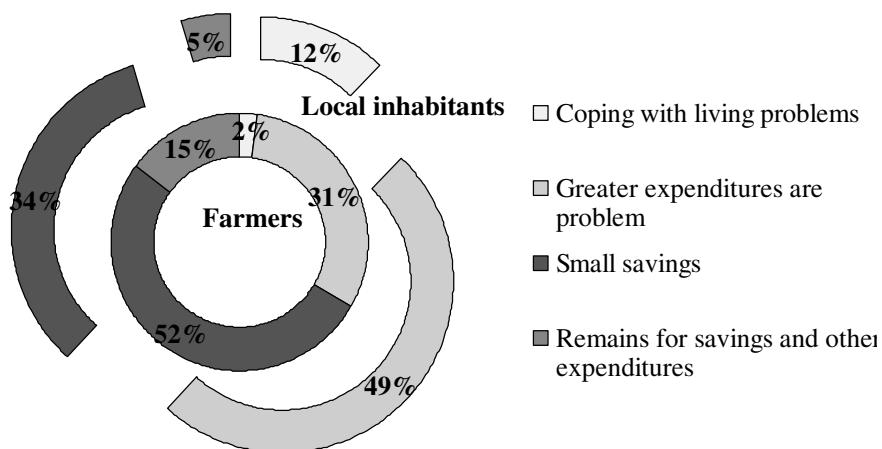


Figure 3.: Living Standard of the Investigated Population and Farmers in the Sub-region of Püspökladány (2006)

area is low due to bad experiences, which concerns mainly the small-scale farmers, thus they cannot improve their situation in this way. Gaining developmental subsidies is not typical to them. Mainly greater farms are able to make savings and finance developments.

To sum up, the agriculture as a profit supplementing activity (as one but not the only one sources of the household revenues) primarily contributes to the more favourable living standard of private farmers in the area than the average of the inhabitants in the most significant way (Figure 3.). To my mind, the ability of the agriculture itself to economically provide for a population is only sufficient in case of middle- and large-sized farms producing for selling, and having a Standard Gross Margin of over 2 500 000 HUF (33% of the respondents).

The practical use of the results

The indicators can be classified into the system, it is understandable and makes the proper utilization possible, and it bases the would-be complex investigations of similar kind, the state evaluation, and the evaluation on the basis of same principles. Its further significance is that it serves a basis for national (local, regional and national) and international surveys, considering the fact that it harmonizes with the methods used by the UN, OECD and EU. It helps in preparing development plans of complex view, in this way it ensures the sustainable development. It suits well to the middle-term objectives and institution and asset system development tendencies of the National Regional Development Conception (2007–2013) as well as to the expectations relating to the monitoring and evaluating system. It harmonizes with the New Hungary Rural Developmental and Strategic Plan by strengthening the strategy; and it serves a basis for working out the local rural developmental strategies with respect to LEADER.

Its practical utilization was justified in the investigated research area (Statistical Sub-region of Püspökladány), in

this way I analyzed the population retaining ability and the ability to economically provide for a population of the area. The necessary corrections should be carried out in the future. *I recommend using this model for basing sub-regional projects for their mid-term reviews, for quantifying developmental levels of communities, for making orders of priority and need and for determining gaining subsidies.*

In the field of education, conclusions, new and novel findings in the dissertation may be fit well into the topic of the rural development subject; I recommend entering the topic of community/regional state survey into the subjects. The figures and tables help the illustration even in the education.

In the field of research, the overdevelopment of the system should be highlighted. To do this, it is necessary to make the analysis in further areas, in order to investigate the wider utilization of the indicator stock and to reduce the indicators (to create key indicators). This last one is necessary to make the mid-term reviews easier. To determine or quantify the population retaining ability and the ability to economically provide for a population in a more concrete way, it is essential to compare more sub-regions.

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