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Ph.D. thesis

CERTAIN ELEMENTS OF POPULATION RETAINING ABILITY AND THE ABILITY TO ECONOMICALLY PROVIDE FOR A POPULATION OF THE COUNTRYSIDE IN THE SUBREGION OF PÜSPÖKLADÁNY

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1. THE OBJECTIVES OF THE RESEARCH

The hypothesis of my research can be summarized as follows:

1. There is a connection between the population retaining ability and the developmental level of a certain community.

2. The change in population represents clearly the population retaining ability of a given community/subregion/region.

3. The primarily condition of retaining the population is to ensure jobs and acceptable income conditions.

4. The Standard Gross Margin[1] produced by enterprises is suitable for measuring profit, and on the basis of size categories created from it (ESU[2]), the ability to economically provide for a population may be concluded.

5. Agricultural production in the investigated subregion has a greater role in supplementing profit and in increasing the living standard than in ensuring employment.

In the first part of the research, I focus on studying, synthesizing and evaluating literature related to the topic. For defining population retaining ability and the ability to economically provide for a population, for understanding the evolvement of differences in development of communities and for setting the goals, it is essential to introduce the relevance information in connection with rural development. Within this, I deal with defining the countryside and rural development, the connection of rural development and regional development, as well as the introduction of the rural policy in the European Union and in Hungary.

The present situation, condition, evolvement of population retaining ability and the ability to economically provide for a population, migration and change in number of the population are highly influenced by historical and political facts, thus it was necessary to study these issues focusing on developments, from the end of the Second World War (1945) till the period following the change of regime. The causes of decisions relating to subregional developments in this period may be only revealed if national developments and political decisions are known, thus their introduction cannot be neglected. These processes induced also the evolvement of the definition of population retaining ability, and the start of the relevance researches.

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[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 be used even 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).

After this, reviewing the available literature is the next step, which is considered to be rather poor. First, I introduce the major migration processes from 1945 till nowadays, as the evoked cause of the problem, then I review that who and in what context tried to define the expression. In the end, I systematize and evaluate researches and investigation on connection with the research, and the conclusions from them. As I did not find any complex definition covering every field, thus **one of my objectives of my research is to make the determination of the definition population retaining ability and the ability to economically provide for a population more complete**.

According to previous researches, that researchers all over the world and even in Hungary deals with selecting and creating indicators which serve to inform decision-makers and the public, to monitor the realization of economic-political-environmental objectives as well as the clearness and questioning of reports from different levels. As indicators were created to certain aims, thus several indicator stocks are available to evaluate problems, processes and states. This fragmentation makes often the visibility difficult. It would be important that the introduction of economic, social and ecological-environmental trends as well as working out forecasts and aims should be based on similar principles and relevance indicator stock. **Thus, my further aim is to create and systematize an indicator stock consisting of fact-type and opinion-type indicators[3], which is appropriate for making international comparisons on the basis of periods and territorial units (community, subregion, county, etc.).**

The practically investigation of the created and systematized indicators in the pointed pattern area (Statistical Subregion of Püspökladány) also belongs to my aims in the second part of my research. The analysis with respect to population retaining ability is rather social-type ones, while the examination of the ability to economically provide for a population is economic-type. At present I focused on investigating only the agriculture from the economic sectors from this point of view. The reason is that firstly, the limits of the dissertation is delimited, secondly, my research may be fit into the PhD program "Economics of Food Industry Enterprises and Rural Development" of the Doctoral School of Interdisciplinary Social and Agricultural Sciences in this way.

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[3] I handle indicators originating from different statistical sources as well as the measurable indicators as fact-type indicators, and indicator on the basis of subjective valuation as opinion-type indicators.

2. THE STRUCTURE OF THE DISSERTATION, THE APPLIED RESEARCH METHODS

I started my research with revealing and studying the relevance literature. During reviewing, I evaluated and supplemented the available publications with my statements. I reflected my point of view in accordance with the connection of rural development and regional development by a figure. As I did not find any uniform and clear indicator system with respect to population retaining ability, analyzing researches relating to population retaining ability as well as studying „DPSIR"-system (Drivers-Pressure-State-Impact-Response) created by OECD and over developed by the European Environment Agency, **I found this model appropriate for systematizing indicators serving investigation of population retaining ability.** This gives a uniform frame for the concerning studies, and ensures the comparativeness of further researches based on the system, both at local and global levels, including the possibilities of international comparativeness, regarding the internationally accepted basis of the system. At the same time, **I expanded the definition of population retaining ability** and defined the given elements of the system.

The literature review was followed by **secondary data collection**, which was aimed at **creating** a fact-type **indicator stock** suitable for investigations at a community level. To do this, I collected data to the aim area of the examination, that is to the Statistical Subregion of Püspökladány for the period between 1999 and 2004 from different sources of the Hungarian Central Statistical Office (HCSO) (County Yearbooks, Regional Statistical Yearbooks, Census proceedings, Community Statistical Database System (T-STAR[4],), as well as General Agricultural Report). In case of missing data, I supplemented the HCSO-data with data of Regional Information System (TEIR[5]) and data in regional surveys done in the Debrecen Business School of the University of Debrecen, Centre for Agricultural Sciences, Faculty of Agricultural Economics and Rural Development. As HCSO collects data at community levels in a limited way, furthermore, it happened that the survey changed, in this way I found data of the given years not in every case. The limited data-source is the reason why I cannot reflect the changes in time. Besides community data, I collected even regional and national data. Then I created fact-type indicators from the data, which are essential for analyzing the subregion and for comparativeness. As the number of the elements was not enough for reducing the indicators by a mathematical method, thus I **created the definitive indicators on the basis of the related literature** (OGY, 1997; FEHÉR-DORGAI, 1998; ROMÁNY, 1999;

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[4] The T-STAR data were provided by the Directory of the Hungarian Central Statistical Office in Debrecen.
[5] The TEIR data was given by the Local Government of Hajdú-Bihar County

SZABÓ-POMÁZI, 2002; SZABÓ ET AL. 2005; FEHÉR, 2005; BAINÉ SZABÓ ET AL. 2005; GRASSELLI, 2006b) **and subjective decision.**

I used the indicators from statistical sources for investigating population retaining ability. To do this, I classified the communities of the subregion 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 both qualifying and quantifying methods. As a qualifying method, I made deep interviews with the mayors of the communities on the basis of a prepared questionnaire. The number of the deep interviews was altogether 13. The questions related to the economic, social and ecological-environmental conditions of the given community. The answers to the questions served the supplementation of the fact-type indicators and gave information for the analysis of the indicators.

For a **quantifying method**, I chose the questionnaire survey, 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 in connection with the questions for the population. In this way, I show its results altogether with the results of the questionnaires for the population. The population survey represents 0,5% of the population opinions, where I aggregated the analysis with the answers of the local governmental workers, this ratio is 0,6%.

I constricted the investigation of **the ability to economically provide for a population** to the **agricultural sector**, due to mainly 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 distorted significantly the result, which hindered the fact that I could make adequate conclusions relating to the whole subregion. 87 private farmers got into the survey from all of the communities of the subregion (*Table 1*.). This sample represents the 9,5 thousand private farmers of the subregion (0,01%) (HCSO-General Agricultural Report, 2001).

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

I made the survey filled out in May of 2006, besides local governmental workers I chose the respondents by chance. **My minimal expectation** relating to filling out the questionnaires **was that every community should get into the sample**. I planned the following by numerically (maximal expectations):

- Questionnaires for population: 30 questionnaires per one community (altogether 360 ones). In order to avoid over-representing greater communities, I did not differentiate the size of the communities when determining the number of the questionnaires.
- Questionnaires for local governmental workers: 10 questionnaires per one community (altogether 130 ones).
- Questionnaires for agricultural producers: 10 questionnaires per one community (altogether 130 ones).

The Local Government of Hajdú-Bihar County helped in having **the questionnaires for local governmental workers filled out.** Questionnaires were sent by mail to every community supplemented by the supporting letter of the Local Government, and our request was even strengthened by phone call, as well. I asked for the help of mayors/notaries in having the **questionnaires for population** filled, which was supplemented by personal interviews in case of insufficient results. Such a personal interview was necessary in case of three communities (Bihartorda, Sárrétudvari and Szerep).

The **survey of agricultural producers** happened totally by personally, by the help of four questioners. They were asked to make surveys among producers in eight communities (two communities per one questioner), I carried out the investigation of the remaining five communities by myself. The survey was helped by the local managers assisting individual farms of the communities that is during their consulting hours we could make interviews with producers showing up. The reason is that because of the secrecy obligation, personal data were not available.

Regarding the content of the questionnaires, each of them contained closed, open, scaling and segmenting questions. To construct the questions, I utilized the help of the literature (CSETE, 1991; ANDORKA, 1996; SZÍJJÁRTÓ, 1996; KAPRONCZAY, 1996; LAKI, 1997; GÖRBE-NEMCSICSNÉ ZSÓKA, 1998; SZONDA IPSOS, 1998; ROMÁNY, 1999; SZOBOSZLAI, 2002; GUTH-VASA, 2003; PFAU-NÁBRÁDI, 2004; VÁRI ET AL., 2004; KSH, 2006c; HAMZA-TÓTH, 2006; NAGY-SZŰCS, 2006), and for ensuring easier processing, I coded the questions in advance already in the questionnaire.

The three-type questionnaires deal with several issues; these are the followings:

- *Questionnaire for population* (altogether 49 questions):
  1. Segmenting questions
  2. Questions relating to employment

3. Questions in connection with income
4. Questions with respect to population retaining ability of the community

- *Questionnaire for local governmental workers* (altogether 30 questions):
   1. Segmenting questions
   2. Questions relating to employment of the community's population
   3. Questions in connection with income of the community's population
   4. Questions with respect to population retaining ability of the community

- *Questionnaire for agricultural producers* (altogether 69 questions):
   1. Information on the manager of the farm (segmenting questions)
   2. Questions relating to the farm
   3. Questions in connection with income
   4. Questions with respect to developments

Table 1. represents the final number of the questionnaires filled out.

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

Denomination of the community	The number of filled out questionnaires (piece)			
	Local governmental workers	Population	Agricultural producers	Altogether
Báránd	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

I used **SPSS 13.0 program** for processing the questionnaires, I carried out the analysis of questionnaires relating to population retaining ability and the **evaluation of the questions on the basis of the created system, classifying the questions according to Drivers-Pressure-State-Impact-Response**. During evaluation I used both descriptive and mathematical-statistical methods. I calculated mean, standard deviation and distribution within

the **descriptive statistics**. I used **mathematical-statistical methods** for revealing correlations between the questions; I calculated the p-value (error probability) to three places of decimals in every case. I used chi^2-test in case of data may be measured on normal scale, I used Kruskal-Wallis test in case of continuous ordinal variables and variance analysis (ANOVA table) for measurable data.

I calculated the total Standard Gross Margin (SGM) of the farms by utilizing the available data in order to investigate the ability of agriculture to economically provide for a population, as well as I determined the European Size Unit (ESU) 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, 2004a). The ESU values calculated from the SGM are used for determining the viabilities of farms, 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. In my dissertation, in the way mentioned before, I made further correlation examination by the help of 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 researches on the basis of economic farm size (by calculating SGM) and production tendency. The AERI placed the typology software of the year 2006 at my disposal, which ensured the comparativeness with the national results and carrying out further correlation investigations of the created farms size in case of the involved 87 farms.

I put the successfully used fact- and opinion-type indicators into the constructed "DPSIR"-system (*Table 3*.), then I created the chapter "Results and Evaluations" according to its structure, basing the variation of the system being used even in practice.

3. MAJOR FINDINGS OF THE DISSERTATION

3.1. System of the 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).
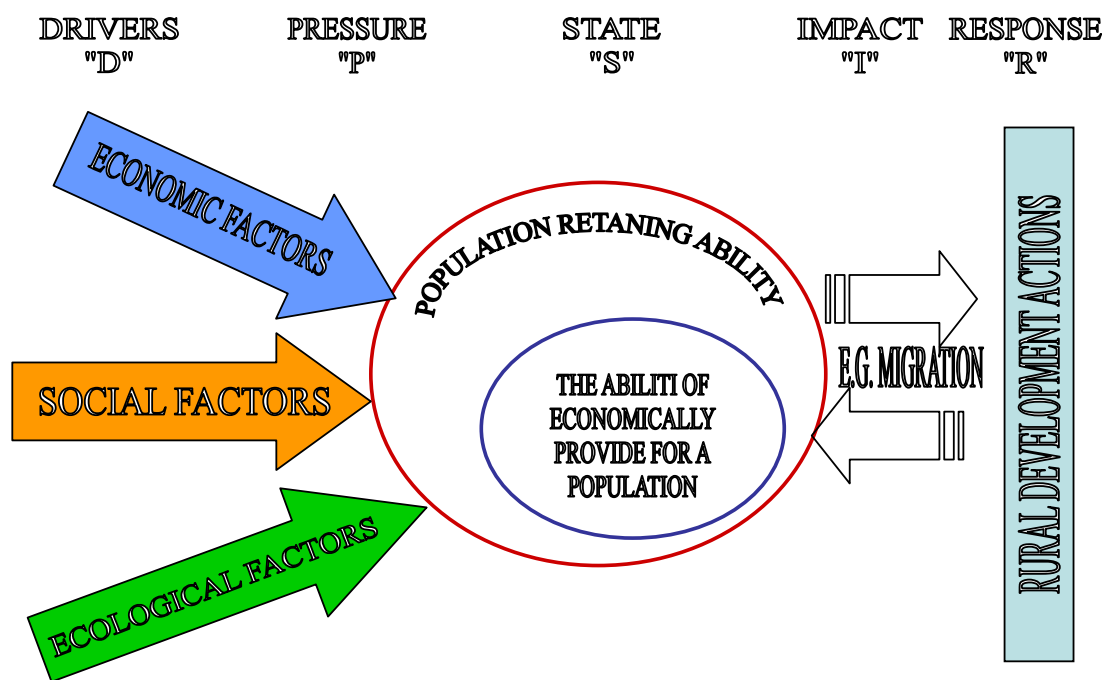
Figure 1.: The System of Population Retaining Ability and the Ability to Economically Provide for a Population

Source: own figure

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 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 researches it influences primarily 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 (This did not happened during the socialist regime, which resulted in migration of high degree).

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 to economically provide for a population*, 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 happen, 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.

3.2. Results and their Evaluations

The Püspökladány subregion is consisted of 13 communities, three of them are towns. Altogether 51 989 population live in the territory of 95 491 hectares of the subregion, the population density is 54 persons per km^2. 60% of the population lives in the three towns, which ratio has not changed since 1990. Comparing the population of each community to the whole population in the subregion, it is clear that 30% of the population concentrates in the centre of the subregion, in Püspökladány, while less than 0,5% of the population lives in the smallest community, in Bihardancsháza. 31% of the population lives in villages having a population lower than 3000, which is 69% of the subregion's communities. There are two communities in the subregion, which population is lower than 1000, from which one hardly exceeds the 200 persons. The population of the subregion has been reflecting a continuous decrease since 1990 (2%).

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**	**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
Tetétlen	3211	1467	1481	0,95

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

Regarding TÓTH's (1982) researches, 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, Tetétlen)

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.*). Henceforward, I analyzed data of the subregion from secondary sources according to this classification, and I use this for even revealing certain correlations during 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 handling separately 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 the 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.
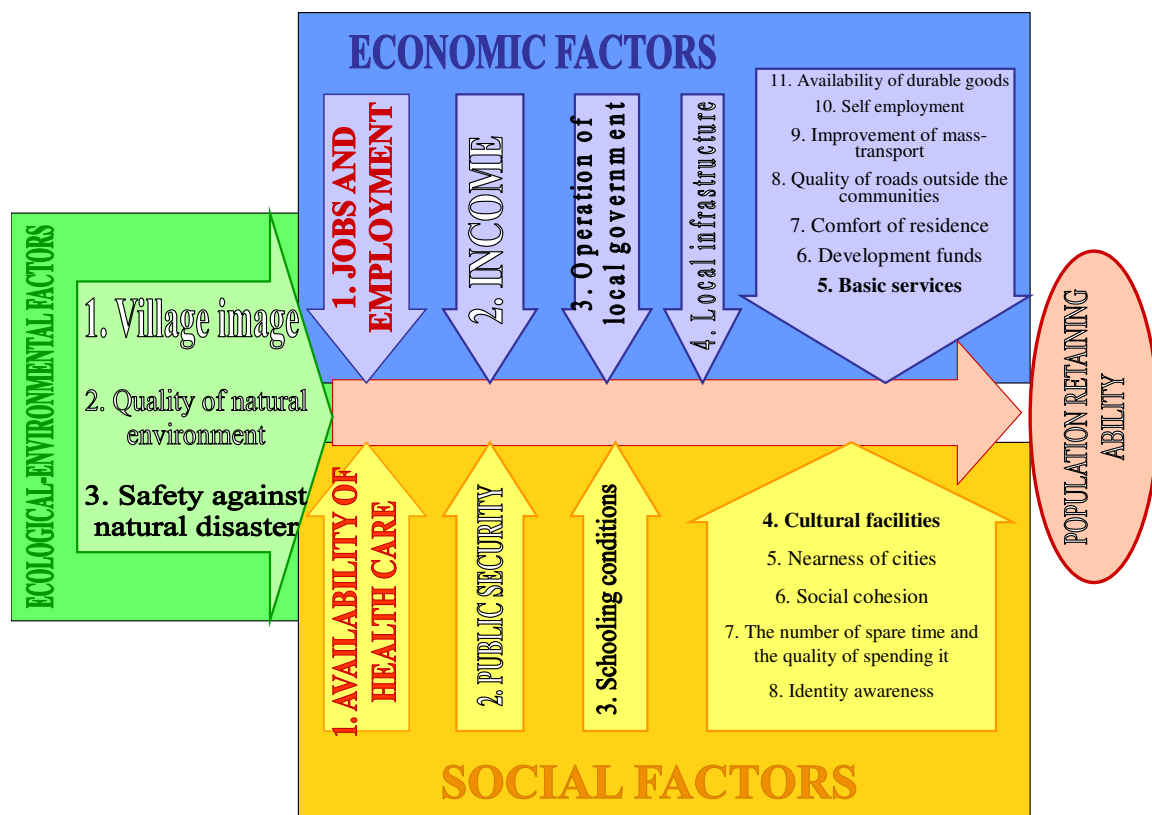

Figure 2.: Drivers and Pressure of Population Retaining Ability in the Subregion of Püspökladány (2006)

Source: on the basis of own investigations

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 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.

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, 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 subregion, 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 subregion 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 have 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 subregion 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.**
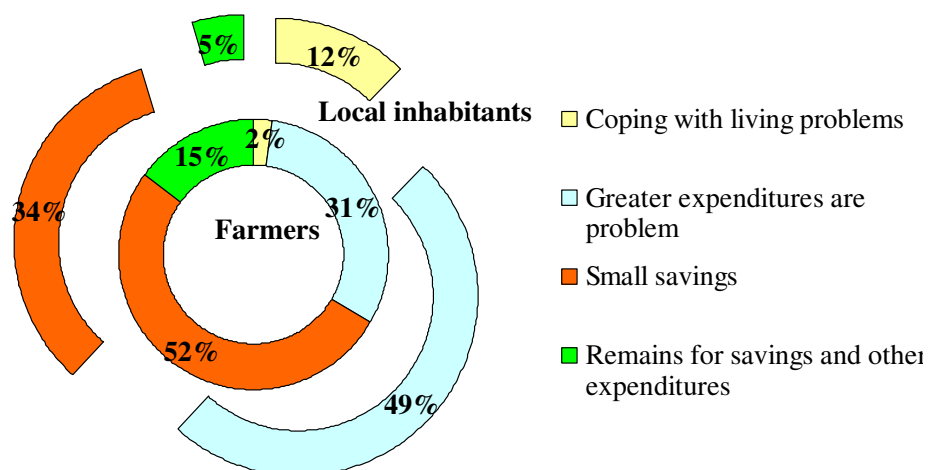
Figure 3.: Living Standard of the Investigated Population and Farmers in the Subregion of Püspökladány (2006)

The willingness to co-operate among the farmers of the 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).

Table 3. Complex „DPSIR” Basic System

DRIVERS („D”)		
Function	**Denomination**	**Measure**
ECONOMIC FACTORS	1. Change in number of operating economic organizations	%
	2. Number of operating economic organizations per 1000 inhabitants	piece
	3. Regional density of operating ventures	piece per km^2
	4. Number of operating ventures per 1000 inhabitants	piece
	5. Dynamic change of operating ventures	%
	6. Agricultural operating ventures from the total operating ventures	%
	7. Number of foreign investments	piece
	8. Ratio of agricultural land from the total area	%
	9. Ratio of arable land from the agricultural land	%
	10. Ratio of garden from the agricultural land	%
	11. Ratio of orchard from the agricultural land	%
	12. Ratio of grassland from the agricultural land	%
	13. Number of private farms per 1000 inhabitants	piece
	14. Ratio of private farms from the economic organizations	%
	15. Ratio of animal keeping farms from the economic organizations	%
	16. Value of farms	HUF
	17. Equipment of farms	
	18. Change in number of economic active population	%
	19. Ratio of economic active population from the whole population	%
	20. Ratio of the inactive from the active population	%
	21. Financial conditions of operation of local governments in communities	O
	22. Personal conditions of operation of local governments in communities	O
	23. Objective conditions of operation of local governments in communities	O
	24. Co-operation within and between communities	O
	25. Local governmental plans for developing certain economic spheres	O
	26. Households connected into water pipe	%
	27. Ratio of households connected into public utility water net system	%
	28. Ratio of households connected to sewage net system	%
	29. Coverage of electricity	%
	30. Ratio of households connected into gas pipe system	%
	31. Coverage of in-community roads	%
	32. Coverage of out-community roads	%
	33. Local and intercity public transportation (railway, bus)	O
	34. number of cars per 1000 inhabitants and its change	piece, %
	35. telephone lines per 1000 inhabitants and its change	piece, %
	36. Internet accessibility	O
	37. Number of small commercial shops per 1000 inhabitants	piece
	38. Number of beds in commercial accommodation per 1000 inhabitants	piece
SOCIAL FACTORS	1. General practitioners and pediatricians per 1000 inhabitants	person
	2. Number of inhabitants per 1 general practitioner and pediatrician	person
	3. Number of children in kindergarten per 1 nurse	person
	4. Number of children per 100 nursery places	person
	5. Number of nursery places per 1000 inhabitants	piece
	6. Number of children in kindergarten per 1000 inhabitants	person
	7. Number of children in elementary school per 1 teacher	person
	8. Number of children in elementary school per 1 classroom	person
	9. Number of classrooms per 1000 inhabitants	piece
	10. Number of children in elementary school per 1000 inhabitants	person
ECOLOGICAL-ENVIRONMEN-TAL FACTORS	1. Sunny hours	hour
	2. Annual average temperature	°C
	3. Annual precipitation	mm
	4. Ratio of forests from the total area	%
	5. Land quality	GC/ha
	6. Ratio of nature conserve area from the total area	%
	7. Number of infringements of lawful rights in environmental protection	piece

O=opinion-type indicator

PRESSURE („P")		
Function	**Denomination**	**Measure**
ECONOMIC FACTORS	1. Number of the inactive per 100 employees	person
	2. Ratio of the employees from the active population	%
	3. Ratio of local employees from the total employees	%
	4. Ratio of agricultural employees of the total employees	%
	5. Change in number of agricultural employees	%
	6. Ratio of employees in industry from the total employees	%
	7. Change in number of employees in industry	%
	8. Ratio of employees in service from the total employees	%
	9. Change in number of employees in service	%
	10. Unemployment rate	%
	11. Ratio of the permanent unemployed from the total inhabitants	%
	12. Ratio of the unemployed having a degree no more than elementary qualification from the total unemployed	%
	13. Agricultural land per 1 inhabitant	hectare per person
	14. Arable land per 1 farm	hectare per farm
	15. Distribution of cropping area of arable plants	%
	16. Distribution of livestock in animal unit	%
	17. Special agricultural products	
	18. Form of product sales	%
	19. Using external machinery service	%
	20. Demand of farmers for external labour	%
	21. Demand of farmers for external financial sources	%
	22. Annual income from main employment per 1 tax payer	HUF per month
	23. Ratio of people getting social benefit per 1000 inhabitants	%
	24. Revenue sources of households	%
	25. Purchase habits of households	%
	26. Water pipes per 1 household connected into public utility water net system	m
	27. Water consumption per 1 person	m^3
	28. Sewage pipe per 1 household connected into sewage net system	m
	29. Length of sewage net system per 1 km water net system	km
	30. Annual energy consumption per 1 household	MWh per household
	31. Electricity consumption per 1 person	MWh
	32. Annual gas consumption per 1 household	$1000 \ m^3$ per household
	33. Gas consumption per 1 person	$1000 \ m^3$
	34. Commercial tourism nights per 1000 inhabitants	piece
	35. Opportunities for meeting demands	%
SOCIAL FACTORS	1. Ratio of inhabitants having university/high school degree from the inhabitants of 25 years or more	%
	2. Ratio of those who have no degree even from elementary school from the inhabitants of 10 years or more	%
	3. Ratio of those having at least degree from elementary school from the inhabitants of 15 years or more	%
	4. Distribution of qualification according to sectors	%
	5. Practical experience in agriculture	%
	6. Knowledge of foreign language	%
	7. Location of children's school	O
	8. Plans for further study	O
	9. Number of cultural events	piece
	10. Number of civil organizations, sport, cultural and art associations	piece
ECOLOGICAL-ENVIRONMEN-TAL FACTORS	1. Ratio of Less-Favoured Area (LFA) from the total area	%
	2. Ratio of Sensitive Natural Area (SNA) from the total area	%
	3. Ratio of area involved in program Natura 2000 from the total area	%
	4. Number of recreational zones	piece
	5. Number of tourism attractive factors	piece
	6. Village image	O

O=opinion-type indicator

STATE („S”)		
	Denomination	**Measure**
	POPULATION RETAINING ABILITY	
	1. Level of living standard	O
	2. Frequency of occurring financial difficulties	O
	3. Solving financial difficulties	O
	4. Satisfaction (with conditions, income)	O
	5. Income ensuring acceptable level of living standard	HUF
	6. Years spent in the residence	year
	7. Confidence (with local inhabitants, public institutes, public people)	O
	8. Factors forming the willingness to leave the residence	O
	9. Perception of development in a given community	O
	10. Knowledge of developmental plans	O
	11. Attachment to the residence	O
	12. Affection for the residence	O
	THE ABILITY TO ECONOMICALLY PROVIDE FOR A POPULATION	SGM
	1. Profit producing ability	ESU
	2. Viability	%
	3. Enterprise distribution of agricultural production	%
	4. Structure of households revenue of farmers	%
	5. Structure of profit from production	%
	6. Distribution of utilizing profit from farming	%
	7. Distribution of major sources of off-farm household revenue	O
	8. Living standard of farmers	O
	9. Satisfaction of farmers (with conditions and profit)	O

IMPACT („I”)		
	Denomination	**Measure**
	1. Change in population	%
	2. Population density	person per km^2
	3. Natural growth and decrease	person
	4. Domestic migration difference	person
	5. Ratio of gypsy minority	%
	6. Aging indicator	%
	7. Ratio of active inhabitants from the total inhabitants	%
	8. Change in flat stock	O
	9. Average of people living in one flat	O
	10. Ratio of new built flats within one year from the total flats	O
	11. Number of flats per one household	%
	12. Change in equipment of flats	person
	13. Sectors of the national economy chosen independent and dependent on income	O
	14. Willingness to change independent and dependent on income	O
	15. Ideas fro the future	O
	16. Willingness to move	%
	17. Direction of moving	piece
	18. Selecting direction of secondary school	O
	19. Willingness to co-operate of farmers	O
	20. Planning in agriculture	O
	21. The effect of EU accession to farming	O
	22. Opinion on would-be role of agricultural production	O
	23. Issue of continuation of farming in the future	O

RESPONSE („R”)		
	Denomination	**Measure**
	1. Developmental plans of local governments	O
	2. Demand of population relating to development	O

O=opinion-type indicator

4. NEW AND NOVEL SCIENTIFIC FINDINGS OF THE DISSERTATION

1. I expanded defining the population retaining ability (besides biological reproduction ability, the ability to economically provide for a population, providing ability, and the attachment of villagers) to the **ecological environment**, and I called the attention that the population retaining ability is strongly determined by the prevailing **political situation**.

2. In order to investigate population retaining ability and the ability to economically provide for a population, I created an indicator stock, whose quantified elements (by processing complex, fact- and opinion-type data) were determined at a lower territorial level (subregion). For systematizing these indicators, I utilized the **„DPSIR" -model (Drivers-Pressure-State-Impact-Response)** created by OECD and over developed by the European Environment Agency, and **used for primarily environment analysis**, which makes in this way an international comparativeness possible.

3. I concluded that **there is not always a strong correlation between the developmental level of a community and the change in the population number**. That is, the population of even a community considered as lagged behind may increase due to the moving in of poorer families leaving developing villages in hope of cheap livelihood. The increasing number of the inhabitants does not go with the development of these communities. **In this way, it is not clear, that the developmental level may influence the population retaining ability of a community.**

4. I justified that **an order may be determined among the factors basically influencing the population retaining ability**, which may change regarding the tendency and ratio of the population change in the community groups according to the age, education and attachment to the population. The order of importance changes significantly in age groups, mainly in case of population of over 60 years.

6. 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 Subregion 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 subregional 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 subregions.

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