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ECONOMIC VIABILITY OF SMALL AGRICULTURAL HOLDINGS IN MOUNTAIN, SUBMONTANE REGIONS AND AREAS OF HIGH NATURE VALUE

Abstract of a dissertation

For awarding the educational and scientific degree of "Doctor" in the professional field 3.8 Economics, Scientific specialty "Organization and Management (Agriculture)"

Sofia, 2024

1. General characteristics of the dissertation

1. Relevance and significance of the topic

Small agricultural holdings (farms) play an essential role in maintaining the sustainable development and viability of rural areas in Bulgaria. They make up a significant share of farms in mountain, submontane regions and areas of high nature value. Small farms produce better quality products and the applied agricultural practices play a significant role in maintaining agricultural land in good condition, preserving biodiversity and the environment.

In recent years, however, there has been a pronounced trend of outflow from agriculture, a decline in traditional labour-intensive practices and depopulation of rural areas. This trend is strongly pronounced in the most vulnerable areas, such as mountain and submontane regions and areas of high nature value. These areas face several environmental, social, economic and migration challenges that affect not only the communities living in this regions, but also agriculture. Often remote, small farmers in mountain and submontane regions are faced with inadequate logistical and technical infrastructure in the provision of basic services and too often lack alternative and/or complementary agricultural activities for work and education for the younger generations.

Small farms located in land of high nature value face enormous challenges in maintaining economic viability. In recent years, with the imposition of increasingly intensive agriculture, yields have expanded and increased, and incomes in the wider economy have increased, making it increasingly difficult for small farms to supplement their income only from land maintenance activities with HNV (Beaufoy, 2008).

At the same time, small farms have a number of positive characteristics: they ensure the sustainable development of mountain areas by creating local jobs, carrying out activities and playing a significant role in maintaining agricultural land in good condition, preserving natural resources, biodiversity and the environment. They have skills and have preserved practices in the production of products with a distinctive regional character, which are local and highly demanded by consumers. In the submontane regions there are great opportunities for the development of ecological agriculture, which would allow to a certain extent through the prices of products to compensate for the lower natural fertility and unfavorable climatic conditions (Doychinova, Y., 2002).

The reduction of small farms, some authors point to as an argument that they are not sustainable viable units. In fact, some of them are experiencing difficulties in economic and

technical aspects: low degree of mechanization, lack of sufficient working capital, low creditworthiness, insignificant and inadequate public support.

Another part of research shows that small farms can be viable units if they plan their activities well and are market-oriented, looking for alternatives to the usual support, bank loans and marketing chains. They focus on reducing costs, adding value to the production and direct marketing, which bring them sustainability and development prospects.

In-depth research is needed to determine the level of economic viability of small farms in mountain and submontane regions and areas of high nature value to reveal the challenges they face.

There are serious studies in the scientific literature on the economic condition, problems and prospects of small farms. There are a large number of publications related to the theoretical and methodological aspects of economic viability, but specific studies on the economic viability of small farms are insufficient. There is a lack of comprehensive research in the Bulgarian scientific literature, on the one hand, focused on the economic viability of small farms. On the other hand, the research is insufficient for farms in mountain, submontane regions and areas of high nature value, which represent a serious resource (25% of the arable land in the country), despite the weaker soil fertility. This necessitates the need for in-depth studies of the economic viability of small farms in these areas.

The need for in-depth scientific research determines the direction, purpose and tasks of the dissertation.

The aim and purpose of the research is to study and assess the economic viability of small farms in mountain and submontane regions, and in areas of high nature value, on the basis of which to determine the opportunities for their development and to consider the effects on the development of these regions.

To achieve the goal, the following research tasks are set to:

1. Justify the choice of criteria for determining small agricultural holdings;
2. Derive the essence of the category "economic viability of agricultural holdings";
3. Develop and approbate methodological tools for assessing the economic viability of agricultural holdings;
4. Analyze the level of economic viability in general and by type of small farms in mountain and submontane regions;
5. Identify the factors that influence or determine the level of economic viability in general and by type of small farms in the surveyed areas;

6. Analyze the results of a survey and an in-depth study of the motivational environment, the contribution of agricultural holdings in the areas of high nature value for the maintenance of public goods and the impact on their development;
7. Outline the opportunities for improving the economic viability of small farms in the studied areas.

The subject of the study are small agricultural holdings (economic class of EUR 2,000 – 7,999 SPO) in mountain and submontane regions, and areas of high nature value. In the study, the mountainous areas defined in the Ordinance for Determining the Criteria for Less-favored Areas and Their Territorial Scope are designated by the abbreviation "HP1", and all other areas with lower altitude and specific restrictions are considered to be submontane regions and are designated by the abbreviation "HP2".

The subject of the study is the economic viability of small farms in mountain and submontane regions, and areas of high nature value in Bulgaria.

Thesis: Small farms in mountain, submontane regions and areas with high nature value have the potential to be economically viable units. For the sustainable development of these regions, it is key to preserve economically viable small farms that can be inherited by the next generations and preserve the processes in the production of traditional products.

Hypotheses of the dissertation:

1. Small agricultural holdings in mountain, submontane regions and areas of high nature value have lower economic potential and financial opportunities compared to small farms in the country.
2. To strengthen and increase their economic viability, targeted, well-focused public support is needed, responding to the specific needs of small farms in mountain and submontane regions, and areas of high nature value.
3. The assessment of the level of economic viability shows different levels by type (areas and specialisation) of small farms in the areas considered.

Approaches and methods of the study: The following methodological approaches are used in the study: systemic, subject, complex, structural, comparative and value-measuring. The approaches used in different parts of the dissertation allow to make important conclusions and generalizations, to outline trends and opportunities for the development of small agricultural holdings, as well as to derive methodological proposals.

The following scientific methods were used: descriptive and comparative analysis, method of statistical groupings, questionnaire and case studies, quantitative methods (ANOVA model) and graphical method.

The study covers the **period 2007 – 2020.** In cases where empirical material is lacking, logical analysis is used.

In the study, in the development and assessment of scenarios for the development of small farms in mountain and submontane regions, the following methods are applied: relative comparative assessment (RCA), probabilistic covariance study (PROCOV), descriptive analysis, indicator method, expert assessment, statistical methods for determining trends.

Sources of information: official statistical information of the Agrostatistics Department at the Ministry of Agriculture and Food, NSI, Eurostat, FADN, primary data from the Accounting and Agricultural Information System (FADN), results of a survey and in-depth study; Officially available expertise and studies of Leader Local Action Groups (LAGs) and the European Commission. The study uses scientific publications of Bulgarian and foreign authors, projects of EAS, NBU, UNWE and a number of normative documents - the Agricultural Producers Support Act, the Rural Development Program (2007-2013) and (2014-2020), the Ordinance on Determining the Criteria for Disadvantaged Areas and Their Territorial Scope, etc.

Restraints of the survey: Due to the limitations of official statistical information, the analysis covers a study of support only for specific EU CAP schemes and measures specifically targeting small farms and their impact on small farms.

The lack of official statistical information on agricultural holdings in areas of high nature value limits the analysis to the implementation of its own survey. The sample is not representative, but the data obtained make it possible to derive dependencies and draw conclusions. In view of confidentiality, some of the personal observations of farms are not reflected in the survey, complying with Regulation (EU) 2016/679 of the European Parliament and of the Council on the protection of natural persons with regard to the processing of personal data.

1. Structure of the dissertation

The structure of the dissertation is subordinated to the purpose and objectives of the research. The dissertation is structured in an introduction and four chapters, a conclusion with a total volume of 215 pages and appendices.

INTRODUCTION.....

CHAPTER ONE .....

Theoretical aspects of the economic viability of small farms .....

1. **Approaches to the definition of small agricultural holdings** .....
   1.1. Definition of a small farm .....
   1.2. Advantages and disadvantages of small farms – theoretical aspects .....
2. **The essence of the category "economic viability of agricultural holdings"** .....
3. **Criteria for determining mountain, submontane regions and areas of high nature value and the role of small farms in them** .....
   3.1. Mountain and submontane regions .....
   3.2. High Nature Value Areas .....

CHAPTER TWO .....

Methodological approaches for assessing the level of economic viability of small farms in mountain and submontane regions and areas with high nature value .....

1. **Methodological approach to assessing the level of economic viability of small agricultural holdings in mountain and submontane regions** .....
   1.1. Economic and Financial Condition of Agricultural Holdings – Indicators and Methods .....
   1.2. Determining the level of economic viability of small farms in mountain and submontane regions .....
2. **Methodological approach to studying the attitudes of small farms in the areas with High Nature Value** .....
   2.1. Survey (Questionnaire) .....
   2.2. Case study of small farms in two municipalities – Chepelare and Banite in Smolyan region .....
3. **Scenario approach to determining the development of small farms in mountain and submontane regions** .....

CHAPTER THREE .....

Analysis and assessment of the economic viability of small farms in mountain and submontane regions and areas with high nature value .....

1. **Scope of small farms .....**
   1.1. Situation of small farms in the country .....
   1.2. Scope of small farms in mountain and submontane regions.....

2. **Supporting small farms and the impact on economic viability.....**

3. **Economic and financial situation of small agricultural holdings in mountain and submontane regions .....**
   3.1. Analysis of the economic situation of small farms in mountain and submontane regions .....
   3.2. Analysis of the financial situation of small agricultural holdings in mountain and submontane regions.....

4. **Assessment of the economic viability of small farms in mountain and submontane regions** .....

5. **Analysis of small farms in territories with high nature value – survey and in-depth study** .....
   5.1. Results of a survey conducted .....
   5.2. Results of a case study on the state of the motivational environment of small farms in two municipalities – Banite and Chepelare in Smolyan district .....

CHAPTER FOUR .....
Opportunities to improve the economic viability of small farms in mountain and submontane regions and areas of high nature value .....

1. **Needs of small farms in mountain and submontane regions and areas of high nature value** .....

2. **Guidelines for improving the condition of small farms in mountain and submontane regions and areas with high nature value** .....

3. **Effects of improving the economic viability of small farms in mountain and submontane regions on rural development** .....

4. **Proposals for sustainable development of mountain regions in relation to the current challenges in the CAP – the Green Deal, the Biodiversity Strategy and the Climate Change Adaptation Strategy** .....

5. **Scenarios for the development of small farms in mountain and submontane regions, and areas of high nature value .....**

CONCLUSION .....

REFERNCES TO THE MAIN CONTRIBUTION TO THE DISSERTATION .....

REFERENCES .....

APPLICATION .....

I. Main content of the dissertation

CHAPTER ONE
THEORETICAL ASPECTS OF THE ECONOMIC VIABILITY OF SMALL AGRICULTURAL HOLDINGS

In Chapter One, the emphasis is placed on building the theoretically problematic basis of the research. A systematic and critical literature review is made of the existing concepts of small agricultural holdings, the criteria for defining mountain and submontane regions, and areas of high nature value, as well as the role of small farms in them. A review of the nature and content of the category "economic viability of agricultural holdings" is carried out.

In the first paragraph of the first chapter of the dissertation, the studied questions in the literature on "what is a small farmer?" are presented. The issue is still debatable and it is necessary to establish and operationalize a definition of a small agricultural holding.

In this context, this dissertation examines different approaches adopted in the literature to define small farms and highlights the advantages and disadvantages associated with each alternative. It examines the criteria to be taken into account in the harmonised definition and reflects the difference between the different approaches.

As a result, **based on the structure of agricultural holdings in the country, the arguments put forward when using the criteria for determining the definition of "small farm" are accepted as justified, as well as the specified thresholds of EUR 2000-7999 of the economic size when defining small farms.**

In the second paragraph of the first chapter of the dissertation, an overview of the criteria for determining mountain and submontane regions and territories of high nature value is made, with significant attention paid to the role of small farms in them.

The main characteristics of small farms in mountain regions that distinguish them from other farms are: they offer a wide range of unique products and services that can be both

essential for local livelihoods and economies and valuable on a regional and even global scale; almost all small farms are located in protected natural areas and a large part of them fall within the boundaries of NATURA 2000, which include more than 85% of the areas of meadows and over 70% of pastures (Report on the state of mountain and submontane regions in Bulgaria, 2018).

Small farms in mountain regions have the opportunity to diversify their agricultural activities with non-agricultural ones by offering services related to tourism, food and trade, as mountain regions provide opportunities for ski and hiking resorts and related services, which are significant sources of regional added value. Many mountain regions have unique biodiversity and landscapes, which makes them attractive for ecotourism and wildlife viewing (for example, offered by national parks). In addition, the rich cultural heritage of the mountain regions, including traditional handicrafts and festivals, can be a major attraction for tourists.

Mountain regions can have significant potential for hydro and wind energy, making them important for renewable energy production. By cultivating the land, small-scale farms in mountain regions play a role in regulating climate change, acting in carbon sequestration, providing clean oxygen and contributing to climate stability.

A literature review on the identification of High Nature Value Land concludes that the conservation of existing HNV land is essential for the objectives aimed at preserving biodiversity and ecosystems.

The third point of Chapter One provides an overview of the nature and content of the category "economic viability of agricultural holdings". The topic of the viability of agricultural holdings is important not only for them, but also for all agricultural entities and is becoming an increasingly relevant and widely discussed research topic.

In the third paragraph of the dissertation, the opinions and methods of evaluation of a number of scientists studying the category of "economic viability. An analysis of the concepts/approaches for economic viability is presented. When reviewing the scientific literature, for greater clarity and systematization of the presentation, the opinions of the individual authors are grouped in several directions.

Based on the reasoning presented by the individual opinions, the following conclusions are drawn:

- ✓ the views are expressed in too general terms, without addressing the specificities and presenting the essential characteristics of economic viability;
- ✓ Some of the authors make attempts to overcome the outlined weaknesses with greater specificity – the need to specify a time horizon (short-term, long-term); indicate that the way of measuring the economic viability of the firm is determined

by the objectives and object of the researcher; others complement the concept of viability with the need to consider marketing strategies;

- ✓ Other authors associate the category with the economic return on the resources used and the financial stability of the farm, which to a much greater extent characterizes the complex and multi-layered nature of the category under discussion.

The conclusion is that economic viability is a complex, multi-layered and wide-ranging category, which is influenced by factors representing a complex complex of internal and external sources for farms. The category is identified by the following characteristics: a broader concept than the ability to generate income; reproduction, ensuring the existence of the farm in the long term, efficiency, financial independence.

The literature review shows that there is still no generally accepted definition of the category of "economic viability" of agricultural holdings, so the dissertation proposes its own definition, taking into account the specific features of agriculture: **The ability to achieve an acceptable return on the resources used, income level and financial stability, ensuring the survival and development of agricultural holdings as relatively independent economic units in the conditions of a changing environment (institutional, market and natural).**

CHAPTER TWO

METHODOLOGICAL APPROACHES TO THE ECONOMIC VIABILITY OF SMALL FARMS IN MOUNTAIN AND SUBMONTANE REGIONS AND AREAS OF HIGH NATURE VALUE

The main objective of Chapter Two is to propose a conceptual model and a package of methodological tools suitable for assessing the economic viability of small farms in mountain and submontane regions and areas of high nature value. A brief critical review of the scientific literature shows that there is no unanimity on the indicators and methods for assessing the economic viability of agricultural holdings - different sets of absolute and relative values are proposed for use.

In this regard, the following requirements have been taken into account in the development of the methodology:

- ✓ Based on the multifaceted and complex nature of the category, economic viability cannot be assessed with a single indicator, which is shared by most authors. That is why the approach of choosing a system of indicators, summarized in several groups, is adopted, which ensures the systematic nature of the study;

- ✓ selection of appropriate benchmarks against which the levels of the resulting indicators are compared;
- ✓ quantitative expression of indicators. They must meet the following conditions – justification and objectivity, specificity and unambiguity of the obtained values, comparability.

The developed methodological approach includes appropriate approaches, methods and selected indicators to reflect the specifics, main and significant aspects of the functioning and economic viability of agricultural holdings.

The following approaches are used in the study: systemic, subject, complex, structural, comparative and value-measuring.

- ✓ *System and benchmarking*

The selected indicators and methods for measuring the economic and financial condition of small farms are considered. In the study of the economic and financial condition of small agricultural holdings, a wide range of **modern methods is used**, which allow for analysis and assessment of the condition, determination of factor dependencies and trends in the development of agricultural holdings: system and comparative analysis; indicator method; expert method; descriptive analysis; method of statistical groupings; inductive and deductive methods for analysis and formation of generalizations and Recommendations.

- ✓ *Comparative and value-measuring method*

A complex method for assessing the economic viability of small farms in mountain and submontane regions is presented. For the purposes of the study on small farms in disadvantaged areas (mountain and submontane regions), the indicator net farm income per farm (FNI) is used, which makes it possible to take the costs of own land and non-borrowed assets. An economically viable economy must be able to cover the costs of labour, land and capital. The indicator of net farm income per farm is also defined as a key indicator for assessing the level of income of the AWU and is suitable for comparison with the minimum wage. It can be concluded that one of the most important indicators for assessing economic viability (FEV) is based on the indicator net farm income per farm (FNI). This indicator includes total production, i.e. crop production, livestock production, etc., including the balance of current subsidies and taxes, adjusted for specific costs and overhead costs. The measure of net farm income per farm is used to cover external factors, including opportunity costs for wages, profits and extended business reproduction.

Net farm income per farm (FNI) should cover not only the wages of workers, but also the expected income for unpaid labor, including farm owners (opportunity cost of equity).

For the classification of individual small farms in the so-defined mountain disadvantaged areas, the analysis **of variance (ANOVA - Analysis of Variance), developed by P.L. Fischer**, was used, analyzing the relationship between two random variables - dependent and independent (also called a factor).

- ✓ *Survey (Questionnaire)*

The task of this analysis is to determine the level of viability by examining the attitudes of small farms to carry out agro-ecological activities in "lands of high nature value". The study aims to identify the reasons for the decrease in practices related to high nature value lands, the awareness of small farms about the activities and measures of the CAP that they can use to receive aid for the protection of high nature value lands, as well as the intentions of small farms to carry out such activities in the future.

- ✓ *Case study*

The aim of the study is to make a comparative analysis of the situational environment of the results obtained from such an analysis in the past and covers two municipalities in the district of Smolyan – Banite and Chepelare.

The study of the state of the motivational environment in the two municipalities was carried out with the help of motivational profiles, which are analytical tools with proven importance in managerial practice for motivating employees. There they are applied to assess the working environment within the individual farm. In the study of the motivational environment in agriculture, the factors of the labor, economic environment and living conditions in the two municipalities are applied.

- ✓ *Scenario approach*

The study of small farms in mountain and submontane regions is also complemented by the application of a scenario approach to forecasting the development of these farms. The purpose of the study in this case is not to develop three possible and relevant scenarios of what the main indicators of small farms in mountain regionswill look like, but to assess what the result of the resulting construction will be. For the construction of the structure, expert assessment and statistical methods were used to determine trends. They are also used in the overall assessment of the outcome of scenarios and in measuring their probability.

CHAPTER THREE

ANALYSIS AND ASSESSMENT OF THE ECONOMIC VIABILITY OF SMALL FARMS IN MOUNTAIN AND SUBMONTANE REGIONS AND AREAS OF HIGH NATURE VALUE

In Chapter Three, the following have been implemented:

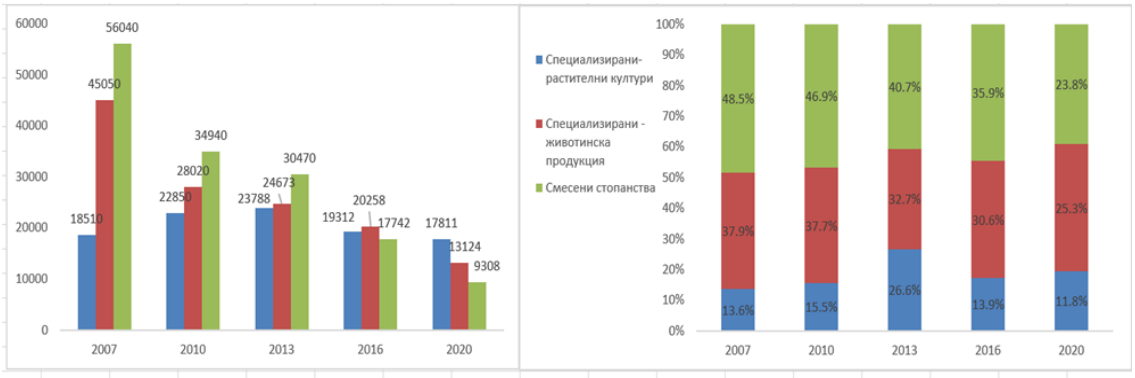
- ✓ situational analysis of the state of small farms in the country for the period 2007-2020, as well as the scope of small farms in mountain and submontane regions;
- ✓ analysis of the effect of support to small farms under the CAP for the period 2007-2020;
- ✓ analysis of the economic and financial situation of small farms;
- ✓ assessment of the economic viability of small farms in mountain and submontane regions;
- ✓ analysis of information from a survey on the attitudes of small farms towards lands of high nature value;
- ✓ analysis of the information from the case study on the state of the motivational environment of small farms in two municipalities – Banite and Chepelare in the Smolyan district.

The use of these methods made it possible to test the initial research hypotheses of the dissertation in the separate points of this chapter.

In the first point of Chapter Three, a situational analysis of the scope and condition of small farms in mountain regions is made. The structure of small farms by specialization and production for the period 2007-2020 is considered.

Figure 1. Structure of small farms by production specialization, 2007-2020

Fig. 11A. Number of small farms **Fig. 11B. Production specialization, %**



Source: Department "Agrostatistic", MAF

In the structure of small farms in 2020, the highest share was held by farms specializing in the production of plant products – 48.7%. Specialized farms for the production of animal products are 31.5%, and those with mixed type of production significantly decreased and reached 19.6%.

This item examines small crop farms, small livestock farms, small farm workforce, market orientation and access to small farm markets, investments and access to external financing, as well as access to information, advisory services and innovations.

In point two of Chapter Three, a comparative analysis of the support to small farms under the Common Agricultural Policy is made. The second hypothesis in the dissertation is tested, namely whether, through the separate measures in the two programming periods (2007-2013 and 2014-2020) under the two pillars of the CAP, the aid provided effectively supports small farms, especially those in mountain and submontane regions and areas of high nature value.

The conclusions drawn on the basis of the analysis for support of small farms under the CAP for the period 2007-2013 can be taken into account as lessons learned in the planning and implementation of the measures in the next programming period:

- ✓ A small share (10-15%) of the supported farms under Measure 141 have the potential to become market-oriented and viable units.
- ✓ An insignificant amount of support under direct payments, many times lower than the average amount for subsidies for farms in the country.
- ✓ Almost zero investment support, due to their lack of experience (in project preparation and business plan management, difficulties in securing their own contribution to financing investments, etc.), hinder the development of small farms and increasing their economic viability.
- ✓ Burdensome administrative procedures, the large number of documents and the lack of economic benefits discourage small farms from applying for support.
- ✓ The lack of coordination and predictability in determining the periods for accepting applications for support is of great importance in planning the activities and work of small farms.
- ✓ The aid provided through CAP measures and mechanisms is insufficient and does not meet the needs of small farms, not well focused to restructure, modernise, develop their potential and increase their economic viability.

Based on the analysis of the EU CAP (2014-2020) support to small farms, the following conclusions are drawn:

- ✓ During the programming period (2014-2020) compared to the previous one, there was a positive change, albeit a small one, towards a more balanced and even distribution of support between agricultural holdings.
- ✓ More targeted and more focused support tailored to their specific needs. More sources and a greater amount of public support can enable small farms to achieve

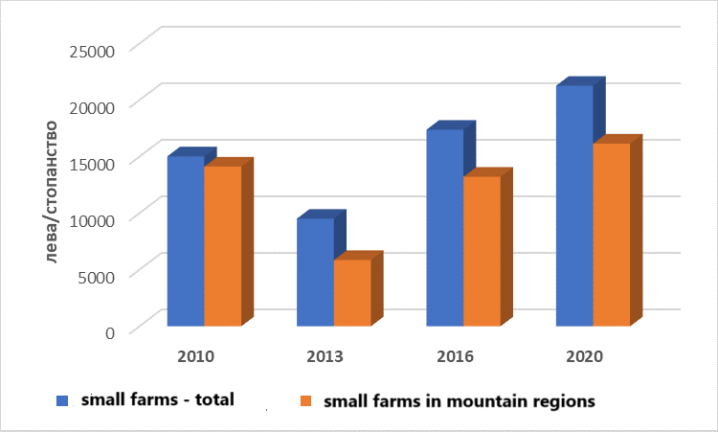
good results such as increasing their economic potential, improving their working environment and qualifications, access to markets, which in turn will lead to an increase in their viability and sustainability.

- ✓ With priority support to small farms in the so-called. sensitive sectors can have a positive effect on the development of this type of production in mountain and submontane regions.
- ✓ The estimated small share of supported small holdings from the expected beneficiaries under the Sub-Programme will not have a significant impact on the trends of restructuring in agriculture.

The third point examines the economic and financial situation of small farms. A comparative analysis of the economic situation between the two groups of farms is carried out – the total number of small farms in the country and the small farms in the mountain and submontane regions.

- ✓ *Gross production* - the more targeted support in the second programming period (2014-2020) has a positive impact on the economic situation of both groups of small farms. In contrast to the small farms in the country, where the increase is significant, the level of BS in the small farms in the mountain regions at the end of the analyzed period is slightly higher compared to the initial value. productivity level of small farms in mountain regions.

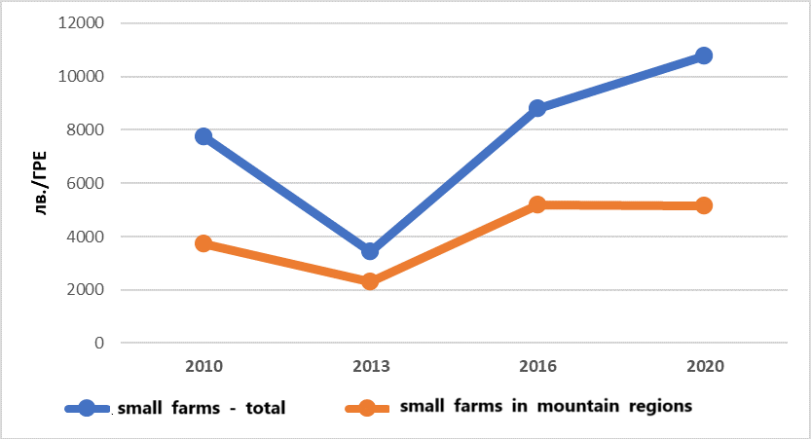
Figure 2. Gross production per farm, period 2010-2020



Source: FADN primary data and own calculations

- ✓ *Productivity* - The comparatively lower productivity of small farms in mountain regions is due to the lower levels of net value added and the higher amount of labour invested compared to the total for small farms. At the end of the analyzed period, the difference in productivity levels between the two groups of farms deepens. small farms in the country.

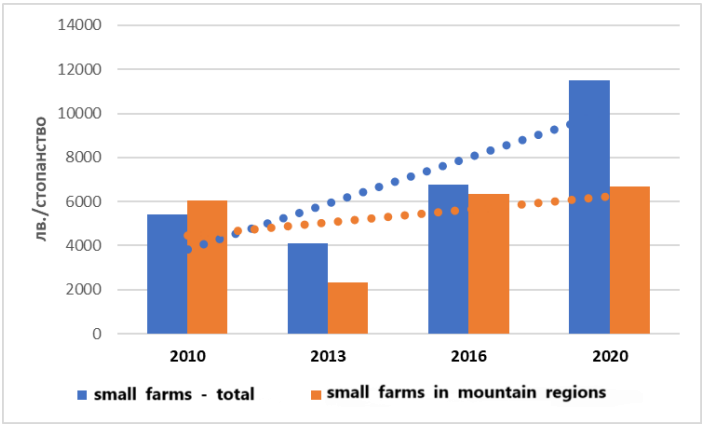
Figure 3. Achieved productivity of farms, period 2010-2020



Source: FADN primary data and own calculations

- ✓ *net income* - Comparing the results obtained for the level of support for the two groups of farms, lower and decreasing support for small farms in mountain regions is outlined in relation to the general group. Higher costs related to the less favorable natural and climatic conditions in mountain agriculture and lower support are the main reasons for the deepening of the gap between the two groups of farms after 2016.

Figure 4. Net income per farm, period 2010-2020

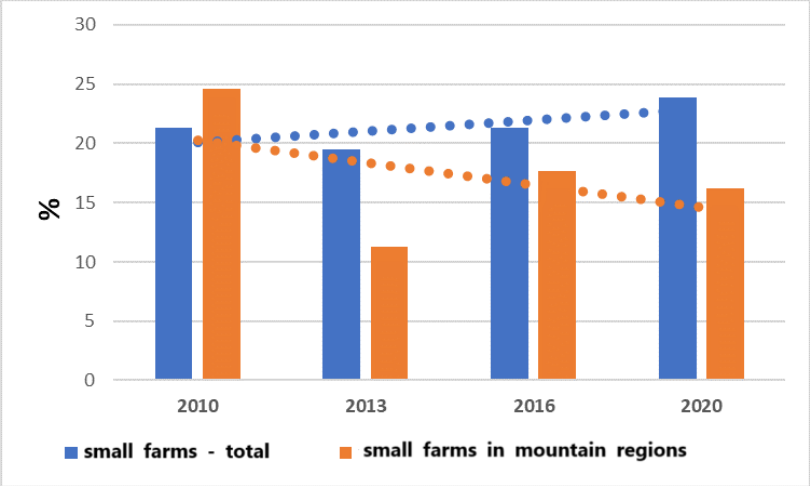


Source: FADN primary data and own calculations

- ✓ *Profitability rate* - While for small farms as a whole for the country, the rate of profitability is towards an increase mainly as a result of an increase in net income as a result of subsidies received. Particularly worrying is the trend of the growing difference in the level of the indicator between the two groups of farms. At the

end of the analyzed period, the rate of profitability of small farms in mountain regions significantly lagged behind the small farms in the country as a whole.

Figure 5. Rate of profitability of production, period 2010-2020



Source: FADN primary data and own calculations

When examining the financial situation between the two groups of farms, the small ones in the country as a whole and the small ones in the mountain and submontane regions, three indicators were examined:

- ✓ *Rate of return on equity*
- ✓ *Total liquidity ratio*
- ✓ *Financial independence ratio*

Based on the analysis, the following conclusions are made about small farms in mountain regions:

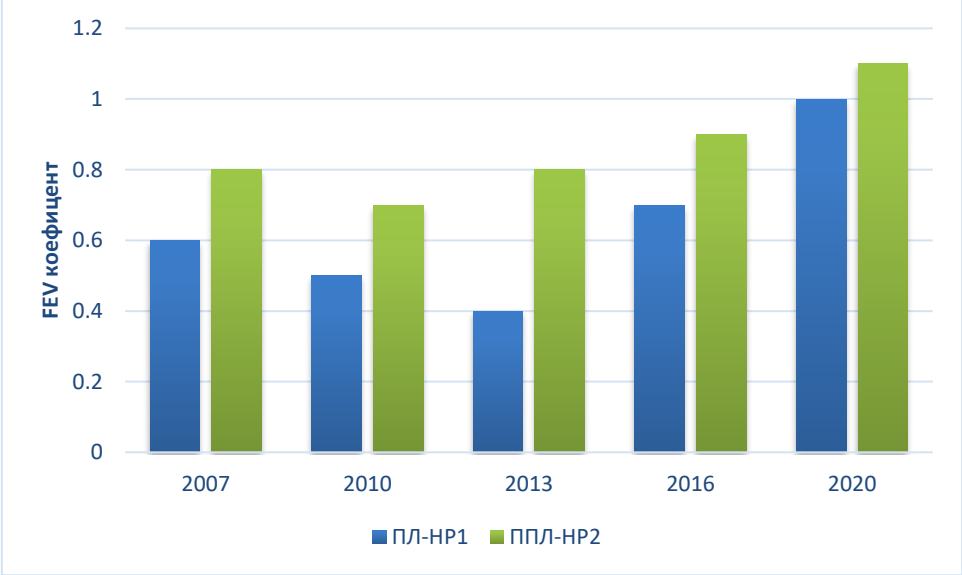
- ✓ They have lower productivity, profitability and productivity than small farms in the country as a whole and the gap is deepening.
- ✓ Due to its smaller size, the level of support is lower compared to small farms in the country as a whole.
- ✓ There is an unfavorable trend towards a decrease in the rate of profitability of production.
- ✓ For the analyzed period, the main economic indicators – gross output, productivity, net income tend to increase, which is due to the support received, and not to the improvement of production efficiency.
- ✓ They are characterized by a stable financial condition, but the lack of borrowed funds and relying only on their own greatly limit the investment activity and the opportunities for expanding the boundaries of the farms.

✓ The need to increase targeted support tailored to the needs of farms is outlined.

The fourth point of this chapter assesses the level of economic viability of small farms in mountain and submontane regions. In the analysis of small farms in disadvantaged areas, they are divided into two groups: farms in mountainous disadvantaged areas, the so-called "HP1" and farms in a disadvantaged area with specific constraints, the so-called "HP2" or submontane regions.

For the entire period analyzed, quite expectedly, the index of economic viability of farms in "HP2" regions is higher than the other group of farms in "HP1", and the difference at the end of the period is deepening. After 2013, both groups of farms showed an upward trend in the economic viability index.

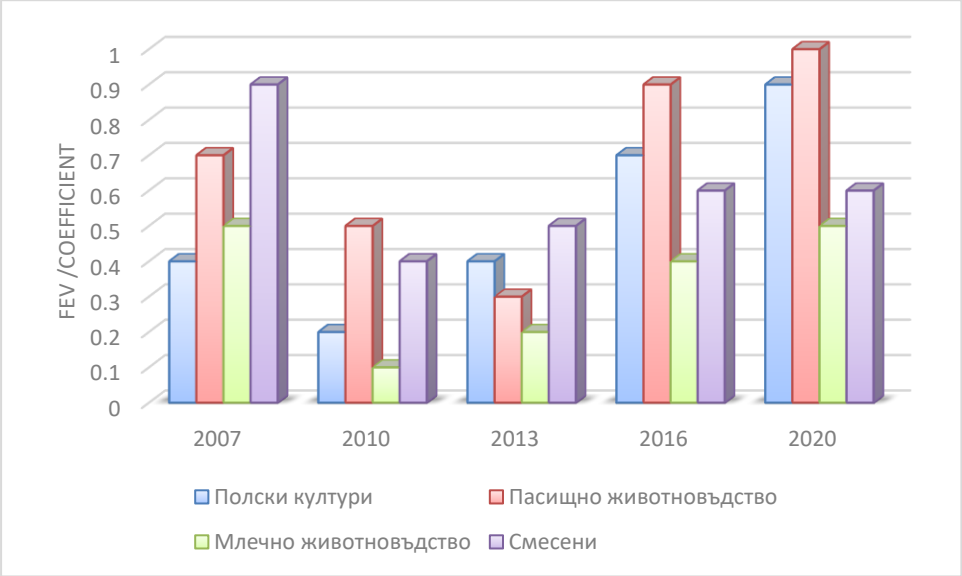
Figure 6. Economic Viability Index (FEV) of small farms in disadvantaged areas, "HP1" and "HP2"



Source: FADN (2007-2020) and own calculations

The Economic Viability Index (FEV) of small farms by specialization in disadvantaged areas is presented.

Figure 7. Economic Viability Index (FEV) of small farms by specialization in disadvantaged areas



Source: FADN (2007-2020) and own calculations

The results of the economic viability index by groups of small agricultural holdings in the disadvantaged regions are presented.

Table 1. Results obtained from the application of analysis of variance (ANOVA)

ANOVA Single Factor

Group	Number	Amount	Average	Variance
Column1	**5**	**5.21**	**0.52**	**9.23**
Column 2	**5**	**6.81**	**0.68**	**5.15**
Column 3	**5**	**3.44**	**0.34**	**3.83**

Multivariate Analysis of Variance (ANOVA)

Source of dispersion	SS	df	MS	F	P-value	F-crit
Between groups	16.913	2	8.456	2.355	0.137	3.885
Inside the groups	43.082	12	3.590			
Total	59.995	14				

The results of the analysis of variance (ANOVA) of the data between the groups and within the groups (Table 1) give grounds to formulate the Null hypothesis (Ho), in which there is no significant difference between the studied groups of farms, despite the fact that there are some differences between their averages.

This shows that, overall, small farms in disadvantaged areas (mountain and submontane regions) are characterised by lower levels of viability and are at risk for their survival and sustainable development.

To confirm the acceptance **of Ho** (temp<ta**),** the Schefee test was also applied. The results showed no significant differences between the different groups of small farms in the disadvantaged areas, as well as by specialization (Schafee Critical value: 2.26 Test: **0.18**, means that there is no difference between farms of arable crops and dairy farming, despite the fact that there are no differences in their average **farms;0.08** means that there is no difference between arable crops and mixed farms, even though there are averages; **0.26** means that there is no difference between dairy farms and mixed farms, regardless of the fact that there is a difference in their average **farms;0.13** means that there is no difference between dairy and pasture farms, regardless of the fact that there is a difference in their average farms;)

Table 2. Results of the Economic Viability Index by groups of small agricultural holdings

Стопанства по специализация	Изследвани групи	Резултати post-hoc, Shauffe	Разлика
Пасищно животновъдство	HP1	0.734	
	HP2	0.984	0.25
Млечно животновъдство	HP1	1.794	
	HP2	1.998	0.20
Полски култури	HP1	2.528	
	HP2	2.783	0.26
Смесени	HP1	1.340	
	HP2	1.402	0.06

Source: FADN (2007-2020) and own calculations

** Comparison of Schefee test results between different groups of small farms.*

The results of the analysis highlighted the following conclusions:

- ✓ In the 2007-2020 period under review, the economic viability of small farms was relatively stable or, in particular, slightly increased.
- ✓ There is significantly lower economic viability in mountain regions, which show a greater dependence on current subsidies, including payments to less-favored areas, a higher share of unpaid labour, lower production and higher unit costs. Subsidies to disadvantaged areas, including agri-environmental payments, represent a significant support and stabilising element of income for small farms and support their economic viability.

- ✓ With regard to the specialization of farms, in accordance with the assessment of the economic viability coefficient, the group of farms for pasture livestock breeding is the most vulnerable. According to the results obtained, one third of which farms are threatened with non-viability. These are mainly the smallest farms (from 2-4000 euros VET), which have smaller areas of UAA in mountain regions. The group of farms with specialization in milk is relatively successful, regardless of which type of disadvantaged region they are located in. These farms showed significantly higher values of the Economic Viability Ratio (FEV) and the Net Farm Income Indicator (FNI) in the observed period 2007–2020. These results can be used to support the development of new agricultural policies, focusing on smaller livestock farms located in less-favored areas.

In the fifth point of Chapter Three, an analysis of small farms in the areas of high nature value is carried out. The results of the survey present the highlighted **conclusions:**

- ✓ Implemented agricultural activities in high nature value lands play a key role in achieving the objectives of the Biodiversity Strategy. They can limit the unfavorable trends related to desert lands, biodiversity loss and increasing intensive agricultural production.
- ✓ The main source of support for farms in lands with high nature value remains the measures and schemes set out in the two pillars of the CAP. From how member states use their financial resources under the CAP in the period 2014-2020, it can ensure sustainable development for farms in lands with high nature value. This, in turn, is crucial for achieving the objectives of the biodiversity strategy and has an impact on environmental protection and regional development policy.
- ✓ Agricultural activities in high nature value lands are key to overcoming the economic problems of farms in these territories, relating to low competitiveness resulting from high cost levels, lack of economies of scale, difficult market access, labour shortages, etc. This disadvantage can be alleviated by implementing measures encouraging cooperation, improving access to information technology in these areas, improving infrastructure, etc.
- ✓ In recent years, there has been targeted financial support for farms in high nature value lands. Thus, the measures and schemes included in the CAP remain a key driver for the sustainable development of these regions, while providing funds to compensate farmers' incomes. This, in turn, leads to overcoming socio-economic and environmental problems in rural areas.

- ✓ The implementation of a wider range of measures targeting farms in high nature value land can lead to the introduction of new requirements by the managing authorities delivering support to farmers. Therefore, an understanding of the complexity of the functional relationship between HNV land farming, management practices and biodiversity is needed.

A separate sub-item presents the results of the case study on the motivational environment of small farms in two mountain municipalities - Chepelare and Banite. The ten most significant factors in terms of motivation from the working environment, the economic environment and living conditions are studied.

The results of the study allow us to summarize the following conclusions about the factors of the motivational environment of those employed in agriculture:

- ✓ It was found that the farms in the two surveyed municipalities are most sensitive to the amount of income from agricultural production and to the employment opportunities of family members.
- ✓ The main demotivating factor in terms of investment and credit activity in agriculture is the unfavorable ratio between the prices of the means of production and those of the final product. High working capital prices discourage farmers from developing intensive agriculture, to comply with technological requirements and therefore to develop competitive agriculture.
- ✓ It is necessary to create strategies for the development of mountain regions in Bulgaria, which include the needs for sustainable development of agriculture and rural areas. Improving infrastructure in these areas by modernising and enhancing social innovation in order to improve living conditions in these areas.
- ✓ Increasing the incomes of small farms in mountainous areas by improving access to investments and the realization of production.
- ✓ Increasing the opportunities for preferential lending in order to encourage those wishing to start a small business integrated with agriculture.
- ✓ The effect of the unfavorable conditions for the provision of working capital loans is highly demotivating – it points out that 75% of the small farms in the municipality of Banite are affected and an even higher relative share – 83% of the municipality of Chepelare.
- ✓ The need to develop entrepreneurial and managerial skills for integration into the business environment, for the integration of all elements of market relations – competition, consumers, suppliers, creditors – for the development of modern agricultural business, is not realized by the studied subjects of labor in agriculture.

Entrepreneurs in agriculture do not show much interest in marketing, managerial, financial-credit and accounting information and consulting services, as well as in various forms of training in these areas.

- ✓ The dissatisfaction of interested farmers with access to the desired information is very pronounced. The most interested in improving the state of the information environment are the producers of animal products from the two municipalities.

CHAPTER FOUR

OPPORTUNITIES TO IMPROVE THE ECONOMIC VIABILITY OF SMALL FARMS IN MOUNTAIN AND SUBMONTANE REGIONS AND AREAS OF HIGH NATURE VALUE

In the fourth chapter, as a result of the outlined needs, guidelines have been developed to improve the economic viability of small farms in mountain, submontane regions and areas of HNVs. The effects on the development of agriculture and rural areas from increasing the economic viability of farms are outlined. With the use of appropriate methodological tools, three scenario options have been developed for forecast changes in the number of small farms in mountain and submontane regions.

CONCLUSION

The dissertation presents a comprehensive scientific study, and in theoretical, methodological, methodological and practical aspects the main issues of the economic viability of small agricultural holdings in mountain, submontane regions and in areas of high nature value and the opportunities for its increase are considered.

On the basis of the theoretical statements of a number of scientists, the methodological framework and construction of the dissertation research has been formed. In the discussion plan, a critical review of the developed concepts for small farms is made. The various approaches and criteria for defining small farms are analyzed in the scientific literature. The differences are outlined, the advantages and disadvantages associated with each alternative are indicated. Based on the available official statistical information, the outlined advantages, ease of use, for the purposes of this study, when defining small farms, the economic size is considered to be an appropriate criterion, which expresses their essential characteristics. In a theoretical aspect, the peculiarities of small business, the advantages and disadvantages of small

farms, arising from their organizational and managerial characteristics, are outlined. From the critical review of the scientific literature, it was found that there are still lively discussions and there is no generally accepted opinion, which gives us grounds for the purposes of scientific research to propose our own definition of the category of "economic viability of agricultural holdings". We believe that economic viability formulated in this way reflects an intrinsic characteristic of agricultural holdings, the ability to survive, function and develop using available resources.

A methodological toolkit has been adapted and tested, including appropriate approaches, methods and selected indicators to reflect the specifics, main and significant aspects of the functioning and economic viability of agricultural holdings. The system of indicators is summarized in several groups - for general characteristics, economic and financial situation and for assessment of the level of economic viability of agricultural holdings. The proposed methodological framework also includes a study of the attitudes of small farms to carry out agro-ecological activities in lands with high nature value through a questionnaire study and a case study of the motivational environment, due to the lack of official statistical information.

In the analytical part, a general characteristic of the small farms in the country is made and their scope in the mountain and submontane regions is outlined. Their number is tracked in dynamics, an answer is given to the question of how the ongoing structural changes affect the specialization, employment and economic size of farms. The results of the analysis of the support under the EU CAP show that in the 2014-2020 programming period it is more balanced, more targeted and more focused compared to the previous programming period. The comparative analysis of the economic and financial situation of small farms in mountain and submontane regions with small farms in the country shows that they have lower potential. The assessment of the economic viability of small farms in mountainous areas in the period 2007-2020 is relatively stable with a slight increase.

The survey of small farms in the areas of HNV shows that the share of farmers who do not know the practices and activities they should carry out is significant, so they highly appreciate the advisory assistance received from the NAAS. The survey data surprisingly show the high relative share (64%) of farmers who declare that they will carry out agro-ecological activities even without support, which confirms their high attachment to the land and satisfaction with their agricultural activity. Farmers point to a number of effects of the applied agro-ecological practices and highly appreciate their contribution to the maintenance of public goods in terms of landscape, food security and cultural and historical heritage in the area. We recommend that the above proposals from farmers for the guidelines for improving the support of farms in areas of HNV should be taken into account when shaping future policies. As a result

of the case study of the motivational environment in municipalities, mainly with mountain agriculture, the main demotivating factors by type of farms have been identified.

In the fourth chapter, as a result of the outlined needs, guidelines have been developed to improve the economic viability of small farms in mountain, submontane regions and areas of HNV – improving economic efficiency, material and technical base, investment activity, increasing incomes, expanding infrastructure and access to social services in the regions. The effects on the development of agriculture and rural areas from increasing the economic viability of farms are outlined. With the use of appropriate methodological tools, three scenario options have been developed for forecast changes in the number of small farms in mountain and submontane regions. The results show that the optimistic scenario is most likely to happen, but it is important to note that the difference is very small with the other two scenarios – pessimistic and realistic.

The dissertation confirms the relevance of the problem under study and the consistency of the main research thesis. The results obtained in the dissertation give grounds to assert that the goal set and the tasks arising from it have been achieved.

The analysis shows that the economic indicators for productivity, productivity, profitability and profitability are lower and the differences are deepening for small farms in mountain and submontane regions compared to small farms in the country as a whole. The comparative analysis also shows a more unfavorable financial situation – the rate of return on equity capital, liquidity, autonomy of the first group of farms.

The results of the study **confirm the first hypothesis** that small farms in mountain and submontane regions and areas of high nature value have lower economic potential and financial opportunities compared to small farms in the country.

On the one hand, these weaknesses, the outlined problems, the unfavorable conditions in which they operate, the low level of support revealed in the study show that small farms in mountain areas face serious challenges and about 1/3 are not viable. On the other hand, the study shows that the share of viable economic units prevails, taking into account the advantages and role, they should be supported according to their needs.

The study shows that small farms in mountain and submontane regions, with appropriate support, have the opportunity to strengthen and expand their potential, which will have positive effects on these areas.

The results of the study convincingly **confirm the second hypothesis** that in order to strengthen and increase their economic viability, targeted, well-focused public support is needed, meeting the specific needs of small farms in mountain and submontane regions, and lands of high nature value.

The results of the study show differences in the level of the economic viability indicator depending on the specialization and the area. There is a significantly lower economic viability of farms in disadvantaged areas, which show greater dependence on current subsidies, a higher share of unpaid labor and higher costs per 1 production. In terms of specialization, the most vulnerable is the group of farms with pasture livestock breeding. According to the results obtained, one third of the farms are at risk of non-viability. The group of farms with specialization in arable crops is relatively successful, regardless of the type of disadvantaged area in which they are located. This confirms the **third hypothesis**, that the expectations are for differences in the level of economic viability by type (areas and specialization of small farms in mountainous and submontane regions.

In view of all this, it is necessary to draw up a multilateral strategy for the development of mountainous and submontane regions. As part of this, the evolution of appropriate and adequate, targeted policy interventions and measures for the development of small farms should be included, which at the same time will be a favourable factor in efforts to understand the complex but lesser-known system in mountain areas. The prioritisation of measures for the development of socio-economic measures in mountain areas should focus on the impediments to agricultural growth, livelihoods and structural disadvantages of these areas. A sustainable effect can be expected from strategies that aim to simultaneously create conditions conducive to the development of tourism, crafts and ecological agriculture in settlements that have potential in all three directions, which characterize mountainous and submontane regions. Protecting the environment, biodiversity and addressing climate change are essential for the sustainable development of mountainous and submontane regions.

MAIN CONTRIBUTIONS TO THE DISSERTATION

Methodological and methodological contributions

1. For the first time in the period of Bulgaria's membership in the European Union, a comprehensive study of economic viability for small farms in mountain and submontane regions is presented.

2. In the discussion plan, a critical review of the developed concepts for small farms is made and the choice of criteria for their determination is justified.

3. Based on a critical review of the scientific literature for the needs of the study, the category of "economic viability of agricultural holdings" is defined as an intrinsic characteristic of agricultural holdings.
4. A methodological toolkit for research and assessment of the economic viability of small farms in mountain and submontane regions and areas of high nature value has been adapted and tested.

Contributions of an analytical nature

1. The trends of the economic and financial condition of small farms in mountain and submontane regions are outlined and an assessment of their economic viability by types of farms is made. On the basis of a survey study and a case study, the attitudes of small farms towards the implementation of agro-ecological activities in lands with high nature value are outlined and the demotivating factors are identified.

Practical and applied contributions

1. On the basis of the identified needs, opportunities for improving the economic viability of small farms in mountain and submontane regions and the effects of its increase on the sustainable development of agriculture and these regions are outlined. Scenarios for forecast changes in the number of small farms in mountain and submontane regions are developed.

SCIENTIFIC PUBLICATIONS RELATED TO THE DISSERTATION

Books

1. **Koteva, N., B. Fidanska (2020)** Book of proceeding VII International Scientific Conference "Agricultural Economics to support farming" (2020) p. 133-144 Small Farms Development and Support Within EU CAP. Book-of-Proceedings-2019-conference-1.pdf (iae-bg.com)

Articles in scientific journals

1. Fidanska, B. (2021). Impact of Climate Change in Mountain Areas and Adaptation of Small Holdings, Journal of Mountain Agriculture on the Balkans, 2021, 24 (6),562-585, https://www.cabidigitallibrary.org/doi/pdf/10.5555/20220224314
2. Koteva, N., B. Fidanska (2020). Small Farms Development and support within EU CAP, Book of proceeding VII International Conference "Agricultural Economics to support farming" (2020) p. 133-144. Book-of-Proceedings-2019-conference-1.pdf (iae-bg.com)

Planned projects at the Agricultural Academy

1. Research project "Innovative models for management of agricultural holdings in mountainous areas", scientific supervisor Prof. Dr. D. Nikolov. (No XTAI 143 / 01.01.2017–31.12.2018), developed by a team of researchers in 2018.
2. Research project scientific project "Socio-economic effects of the EU CAP on the development of agricultural holdings and rural households", scientific supervisor Prof. Nina Koteva. (No. AI-2/2019), developed in 2019. by a team of researchers from the Institute of Agrarian Economics, Sofia. Sofia.
3. Research project "Perspectives for Bulgarian Agriculture and Rural Areas in the Context of the CAP 2021-2027 and the EU Recovery Plan", led by Assoc. Dr. Bozhidar Ivanov. AI 5 (RD-05-133/21.07.2021), developed in 2021-2022 by a team of researchers from the Institute of Agrarian Economics, Sofia. Sofia.
4. Research project "Provision of agro-ecological public goods in agriculture through improvement of contractual relations" (PRADO), scientific supervisor prof. Dimitar Nikolov. (SAA AND AI 7) developed in 2022-2023 by a team of researchers from the Institute of Agrarian Economics, Sofia. Sofia.