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Governing structures in functional areas of Bulgarian farms

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Abstract. The study of governance structures and contractual modes in agriculture is central to agricultural economics due to their role in coordinating relations, distributing risks, and minimizing costs. In Bulgaria, existing research on agrarian governance remains episodic, reliant on official statistics, and limited to isolated contract types or unrepresentative case studies. To address this gap, this study applies the framework of New Institutional Economics (NIE) to conduct a comprehensive analysis of the structure, governing modes, and evolution of resource supply, services, innovation, risk management, and marketing within Bulgarian farms. Based on a representative survey of 345 commercial farm managers conducted between November 2023 and January 2024, the paper examines how transaction characteristics (asset specificity, uncertainty, frequency) and institutional environment influence farmers' managerial choices across market, contractual, internal, and hybrid modes. The findings demonstrate that NIE methodology effectively captures the complex reality of agrarian transaction governance beyond traditional neoclassical models. The paper concludes with critical policy and operational recommendations, emphasizing the need to reform official agricultural data collection systems in Bulgaria and the EU to incorporate microeconomic transaction data for better decision-making and policy design.
Keywords. Agrarian Governance; New Institutional Economics; Transaction Costs; Contractual Modes; Bulgarian Agriculture.
JEL. D23; L14; P23; Q12, Q13.
SDGs. SDG2; SDG8; SDG12.

1. Introduction

The analysis of types and structure of contractual and governing modes used in agriculture has been at the center of economic science from its classical period to the present day (Bachev & Terziev, 2001, 2002; Furuboth & Richter, 2000; Georgiev et al., 2023; Goodhue, 2022; Michler & Wu, 2020; Massey, Sykuta, & Pierce, 2020; Mishra, Kumar, & Joshi, 2022; Otsuka, Chuma, & Hayami 1992). This is due to the important economic role the governance plays as a means of coordination, stimulation, distribution of risk, minimization of costs and maximization of benefits of farmers relations with other agents – owners of land and other resources, hired labor, creditors, buyers of produce, etc.

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In Bulgaria, studies of agrarian contracts and governance are episodic, and focused on particular forms (e.g. land lease contracts, credit supply contracts, sales contracts, etc.) while the entire governing structure used by farms is rarely analyzed. Moreover, the analyses are based on official (statistical and other) information, which gives an idea of only a part (formally registered land transactions, labor employment contracts, bank credits, etc.), and not of the overall relations of agrarian agents. Existing few case studies are limited to certain farms or types of contracts used by them and, as a rule, are not representative.

This chapter presents the results of a large-scale study of the structure, factors and evolution of contractual and governing modes used by agricultural farms in Bulgaria, including the management of supply of natural, material, biological, financial and human resources, short-term assets, services, innovations, risk management, marketing of farm produce and services, and provision of ecosystem services. The study is based on a survey of managers of typical farms of different types and locations conducted at the end of 2023.

2. Methodology

The study incorporates interdisciplinary New Institutional Economics in order to overcome the shortcomings of other (Neoclassical Economics, Agency Theory, Law, Sociology, Political sciences, etc.) approaches for identifying the governance modes in modern agriculture (Bachev, 2022, 2023, 2024; Bachev & Kargı, 2023; Bachev et al., 2025; Guo et al., 2023; James et al., 2011; Kargı & Bachev, 2024; Kargı et al., 2023; Sykuta & Cook, 2001). It places the individual transaction at the center of the analysis, identifies possible forms of its governance (e.g., market, contract, internal, etc.) in the specific institutional, market, technological, and natural environment, and assesses their comparative efficiency in a discrete (primarily in terms of minimizing transaction costs) manner (Williamson, 2005).

Usually, economic agents can choose between a number of alternative forms of governance for a specific transaction (say land supply), the main ones being:

- a free market - e.g., seasonal rent, a short-term purchase-sale deal, etc.;
- a special contractual form - e.g., long-term lease of land, interconnected supply of land against marketing of the produce, etc.;
- internal organization - e.g., land ownership, partnership, etc.;
- coalition – e.g. a contract or organization for collective land cultivation, etc.;
- some hybrid mode – e.g. leasing public lands, public-private partnership,

Since, the process of changing the system of agrarian governance is very slow (Bachev, 2023), domination of certain forms of governance of a given agricultural activity and transaction means that they are most effective for the participating agents in the specific conditions of implementation of agricultural activities and exchange (Bachev, 2010).

In the specific socio-economic and natural environment, the choice of a form of governance depends in principle on the characteristics of the agents (preferences, abilities, bounded rationality, opportunism, etc.) and the "critical dimensions" of the transactions (such as frequency, uncertainty, specificity of assets). For example, when the uncertainty and specificity of assets related to transactions are high, a special (contractual or internal) form

of governance is needed to increase rationality and protect specific investments from possible opportunism. The repetition of transactions between the same agents reduces bounded rationality and opportunistic behavior, and justifies the costs of special governance ("bilateral trade regime"). Universal transactions are managed more efficiently by the "invisible hand of the market" (high competition, the partner can be replaced at low cost). High uncertainty, random (single) exchanges between parties, and the need for investment in relationships with a given partner increase transaction costs and can block otherwise mutually beneficial exchanges (need for third-party intervention and public intervention in private transactions).

Unspecified or poorly defined and sanctioned property rights and an imperfect institutional environment also increase the transaction costs of agents. When the transaction costs of procuring the necessary resources and/or marketing the output are significant, the potential for exploiting technological economies of scale and size cannot be realized within the boundaries of the farm. In this case, a special external organization is needed to effectively carry out the necessary transactions. When there is a need for intervention (inclusion, support, etc.) by a third party, but the necessary public or private intervention is not made, then the development of agriculture is severely deformed (less exchange, low efficiency, missing markets, gray structures, unsustainable development).

The main agents who govern agrarian transactions and activities are the managers of different type of farms – individual, family, cooperative, corporative etc. Nobody knows better than farm managers the status and conditions of resources, activities and relations, the actual reasons for managerial choices, practically used governing forms (for resource supply, marketing, etc.), specific and overall costs and benefits for the enterprise, key factors facilitating or restricting development of farms, etc. There is no available statistical and other data for comprehensive analysis of governance structures of Bulgarian farms. That is why this study is based on first hand data provided by the farm managers.

During November, 2023 – January 2024 a large-scale survey was carried out with the managers of 345 commercial farms of different juridical type, size, product specialization, and ecological and geographical locations. Farmers were interviewed by the local experts of the National Avicultural Advisory Service and selected as typical for the relevant region of the country. Surveyed farms account for 0,26% of all farms in Bulgaria (MAF, 2023). Majority of studied farms (94,2%) are "Registered Agricultural Producers" comprising 0,5% of all registered agricultural producers in the country (Agrarian Paper, 2023). The structure of interviewed farms approximately corresponds to the contemporary structure of Bulgarian farms. The summary of major characteristics of surveyed farms is presented on Table 1 and Table 2.

Table 1. *General characteristics of surveyed farms (percentage)*

Type of farm	Field crops	Vegetables, flowers, mushrooms	Permanent crops	Grazing livestock	Pigs, poultry and rabbits	Mix crops	Mix livestock	Crops-livestock	Bee keepers	Share in total
Physical persons	23,9	90,4	76,8	67,8	50	60,4	57,1	54,6	85,7	67.8
Sole traders	17,4	7,7	9,8	11,3	0	12,5	28,6	15,2	10,7	11.3
Cooperatives	13	0	0,9	4,4	12,5	6,2	0	12,1	0	4.4
Corporations	43,5	1,9	11,6	15,4	37,5	20,8	14,3	18,2	1,8	15.7
Associations	2,2	0	0,9	0,6	0	0	0	0	1,8	0.6
Mostly subsistence	0	2	1,8	2,1	12,5	0	0	0,0	1,9	2.1
Small size	11,6	71,4	60,6	47	25	44,4	50	34,4	43,4	47
Middle size	58,1	26,5	33,9	42,8	62,5	44,4	50	59,4	52,8	42.8
Big size	30,2	0	3,7	8,1	0	11,1	0	6,2	1,9	8.1
Registered Agricultural Producer	95,65	98,08	97,32	94,20	87,50	97,92	42,86	90,91	96,43	94.20
Registered livestock producer	13,04	3,85	4,46	26,09	87,50	2,08	85,71	66,67	48,21	26.09
Organic producer	2,17	9,62	24,11	13,33	0,00	4,17	0,00	6,06	35,71	13.33
Shate in total	13.3	15.1	32.5	9.9	2.32	13.9	2	9.6	16.2	

Source: Interviews with farm managers, 2023.

Table 2. *Geographical and ecological characteristics of surveyed farms (percentage)*

Type of farm	Field crops	Vegetables, flowers, mushrooms	Permanent crops	Grazing livestock	Pigs, poultry and rabbits	Mix crops	Mix livestock	Crops-livestock	Bee keepers	Share in total
Mainly plain regions	88,4	70	67	68,3	75	76,1	85,7	46,4	61,1	68.3
Mainly mountainous regions	11,6	30	33	31,7	25	23,9	14,3	53,6	38,9	31.7
Protected zones and territories	1,2	1,7	3,8	9	0	0,9	0,3	1,2	2,6	9
Near big cities	0,9	2,3	7	13	0	1,4	0	0,9	0,9	13
North-west region	32,6	7,7	7,1	20,3	50	18,8	0	27,3	23,2	20.3
North-central region	15,2	7,7	9,8	9	25	6,2	14,3	12,1	8,9	9
North-east region	17,4	17,3	19,6	19,7	12,5	35,4	57,1	21,2	32,1	19.7
South-west region	15,2	34,6	27,7	19,7	0,00	12,5	0	18,2	8,9	19.7
South-central region	10,9	26,9	22,3	21,7	0,00	16,7	14,3	21,2	17,9	21.7
South-east region	8,7	5,8	13,4	9,6	12,50	10,4	14,3	0	8,9	9.6
Shate in total	13.3	15.1	32.5	9.9	2.32	13.9	2	9.6	16.2	

Source: Interviews with farm managers, 2023.

The questionnaire contained 29 main questions and multiple sub-questions on general characteristic of the farm (juridical status, size, specialization, location, etc.) and farm manager/owner (age, gender, education, experiences, etc.), specific modes and factors of governance of all major type farm transactions (supply of land, water, labor, services, short-term and long-term material and biological assets, finance, knowledge and innovation; marketing of farm output and services, and risk management), and factors facilitating and restricting farm development. The questions and possible responses were designed after extensive literature review and numerous in-depth interviews with farm managers. It was discussed with leading experts in the area, tested with managers of different type of farms in two regions of the country (Plovdiv and Blagoevgrad), and further improved. An option is also given for a new response and comments to all questions.

The goal was to "translate" the basics Economics categories (governance, bounded rationality, opportunism, transaction costs, institutional regulations

and restrictions, etc.) to the everyday language of the managers in order to avoid any confusion and make a proper analysis. Both formal and informal arrangements, including interlinked, complex and hybrid modes are taken into account. All critical institutional, market, personal, technological, natural, etc. factors for governance choice are accounted for. Total institutionally and personally determined transaction costs are included into analysis (information, learning, precontractual, post-contractual, coalition management and development, etc.). The governance of agrarian transactions is studied holistically since not only specific (direct) but the overall costs of the farm is taken into consideration.

In order to improve the precision and avoid misunderstandings, the interviewers were trained by authors and constantly consulted throughout the survey process in person or by telephone. The honesty of farmers responses was ensured by guarantying anonymity, since some concerns were raised about detailed questionnaire and leaking individuals' data to other interested parties (government and tax authority, competitors, etc.).

The questionnaire used in this survey was updated version of an old questionnaire from a similar large-scale study carried out during pre-accession period to the EU in 2001. The latter gave extraordinary opportunity to compare the results from both studies and analyze the evolution of modes and factors of land supply governance in the last two decades (before and during EU CAP implementation).

The responses of farm managers were summarized and grouped according to the farms' type and personal characteristics of managers. For checking the survey representativeness, estimation of the statistical error is performed indicating discrepancy between the survey results and the whole population. The statistical test for measuring the error is carried out using a two-step procedure and equations suggested by Ivanov et al. (2022). The statistical error is estimated for confidence level of 95% and it calculated to be 0,106. Therefore, there is 10,6% chance the generated results from the field survey to be different from the real results of the entire population. A hypothesis Z test is also implemented, dividing the sample into two subgroups randomly. The confidence levels in the covered 5 sub-questions are ranged between 98,7% up to 99,3%. The test shows that there is not principal difference between two subgroups and they have same meaning and root results. Therefore, with high level of confidence is proven that estimated results and distribution between optional answers are quite reliable and that similar distribution of responses applies for the entire population.

Therefore, with a high confidence can be suggested that survey results give realistic insights on the dominating modes, factors and trends in land supply governance of Bulgarian farms. Statistical representativeness of the sample is significant; trust of farmers was ensured by guaranteeing anonymity; the data collection and processing were implemented professionally; and the big number of surveyed farms diminished the importance of cases of misunderstanding or misinforming. Besides, similar results have been demonstrated with multiple in-depth case studies of different type of farms in recent years (Agro-Governance Project, 2024).

3. General characteristics of the surveyed farms

The majority of the surveyed farms are unregistered Physical Persons (67.8%), with the majority of the rest having the legal status of firms – 15.4% are Corporations and other companies, 11.3% are Sole Traders and 0.6% are Associations (Table 1). Just over 4% of the surveyed farms are Cooperative farms. The majority of all surveyed farms are registered as agricultural producers, and 26% of them have a livestock breeder registration. Just over 13% of the surveyed farms have certification as organic producers.

The majority of the surveyed farms' managers define their enterprise as rather small for the industry (47%), and the remaining significant part are of medium size for the sector (42.8%). Just over 8% of all farms are large for the industry, and about 2% are mainly for self-sufficiency.

A large part of the surveyed farms are specialized in perennial crops (32.5%), followed by farms with bee colonies (16.2%), and those specialized in vegetables, flowers and mushrooms (15.1%), mixed crop production (13.95), and field crops (13.3%). Farms specialized in herbivores and those with mixed crop and livestock production each have about 10% share in the total number of surveyed farms. Slightly over 2% of all farms are specialized in pigs, poultry and rabbits. The majority of the surveyed farms of agricultural producers are located in mainly plain regions of the country (68.3%), and every ninth has land in protected areas and territories (Table 2). Slightly over 13% of the surveyed farms are located near large cities. The largest number of farms were surveyed in the south-central and north-western regions of the country (21.7% and 20.3%, respectively), and the smallest number in the north-central (9%) and south-eastern (9.5%) regions.

The majority of surveyed farm managers and owners are men (68.1%), almost 32% are women, and nearly 5% of the farms are partnerships (Table 4). The majority of surveyed managers (39.1%) are aged 41 to 54, a significant proportion are young farmers up to 40 years old (32.8%), and 11% are of retirement age over 65 years old.

The majority of surveyed managers have secondary education (48.1%), and a significant proportion also have higher education – 46.4%. Only a small proportion of surveyed farms have managers with only professional agricultural qualifications (3.2%) or primary education (2.3%).

Table 4. *General characteristics of the surveyed farm managers (percentage)*

Characteristics	Field crops	Vegetables, flowers, mushrooms	Permanent crops	Grazing livestock	Pigs, poultry and rabbits	Mix crops	Mix livestock	Crops-livestock	Bee keepers	Share in total
Male	84,44	59,62	56,60	68,07	71,43	69,39	85,71	79,31	69,23	68.07
Female	15,56	40,38	43,40	31,93	28,57	30,61	14,29	20,69	30,77	31.93
Partnership	1,74	0,29	1,16	4,93	0,29	28,57	0,00	1,16	0,00	4.93
Young farmer (up to 40 years old)	18,00	40,82	45,95	32,56	25,00	40,82	0,00	19,35	39,29	32.75
Age 41 to 54 years old	42,00	44,90	35,14	38,90	50,00	18,37	42,86	45,16	32,14	39.13
Age 55 to 65 years old	34,00	4,08	8,11	17,58	12,50	12,24	57,14	22,58	14,29	17.68
Over 65 years old	6,00	10,20	10,81	10,95	12,50	28,57	0,00	12,90	14,29	11.01
Primary	2,32	2,32	2,32	32,75	2,32	2,32	2,32	2,32	2,32	2.32
Secondary	48,12	48,12	48,12	39,13	48,12	48,12	48,12	48,12	48,12	48.12
Higher	46,38	46,38	46,38	17,68	46,38	46,38	46,38	46,38	46,38	46.38
Professional agricultural qualification	86,38	85,22	69,28	11,01	97,39	86,67	98,55	91,01	84,35	3.19

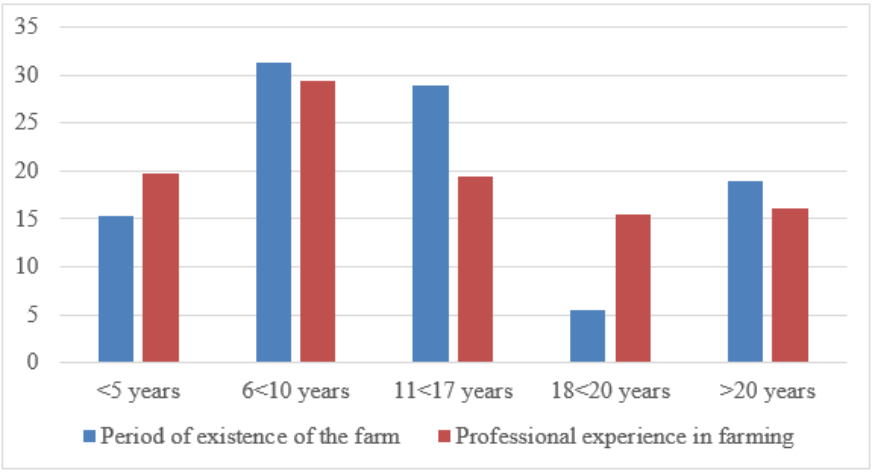


Figure 1. *Farm existence period and professional farming experience of the surveyed managers (percentage)*
Source: Interviews with farm managers, 2023.

Every fifth of the surveyed managers is a member of a professional organization of agricultural producers (Figure 2). A small part of the surveyed farms participate in collective organizations, including 3.8% in a production cooperative, 1.7% in a marketing cooperative, and 1.4% in a supply cooperative.

Just over 7% of all surveyed farmers own other firms (Figure 2). At the same time, only 1.4% of the surveyed farms own other farms. Furthermore. a small part of the surveyed managers indicate that their farm is owned by another farm (1.2%) or another firm (0.6%).

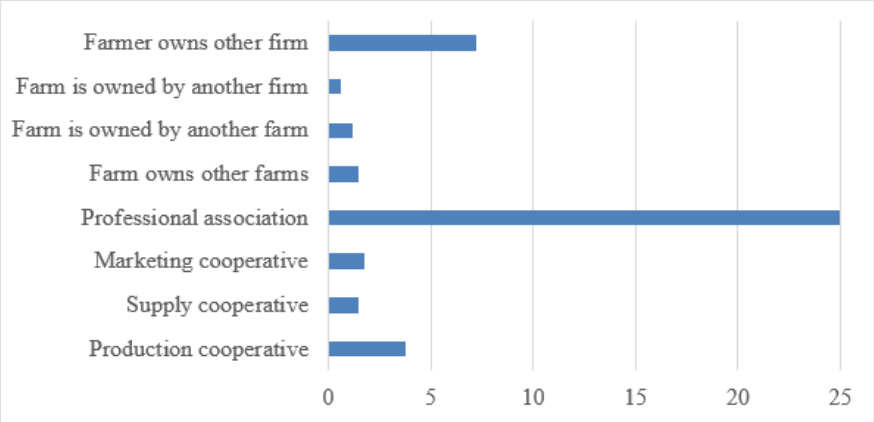


Figure 2. *Membership of farm in organizations and in ownership of other agents (percentage)*
Source: Interviews with farm managers, 2023.

4. Governance modes in the main functional areas of farm management

The survey found that slightly more than 90% of farms manage agricultural land. Almost 70% of farms own their own land - individual group or firm property, acquired by inheritance, donation, purchase, etc. Nearly 65% of all farms use leased land through short-term or long-term rental or lease agreements. Only 2.3% of all farms cultivate land jointly on the basis of some kind of joint activity agreement.

A significant part of Bulgarian farms participate in transactions for the purchase or sale of agricultural land - 62.9% and 72.2% of all farms, respectively (Figure 3). A large share of farms (48.1%) use short-term rental agreements to secure the necessary agricultural land. Nearly 36% of agricultural producers practice long-term lease-in of land. A significant proportion of Bulgarian farms also lease out land through short-term rental or long-term lease agreements.

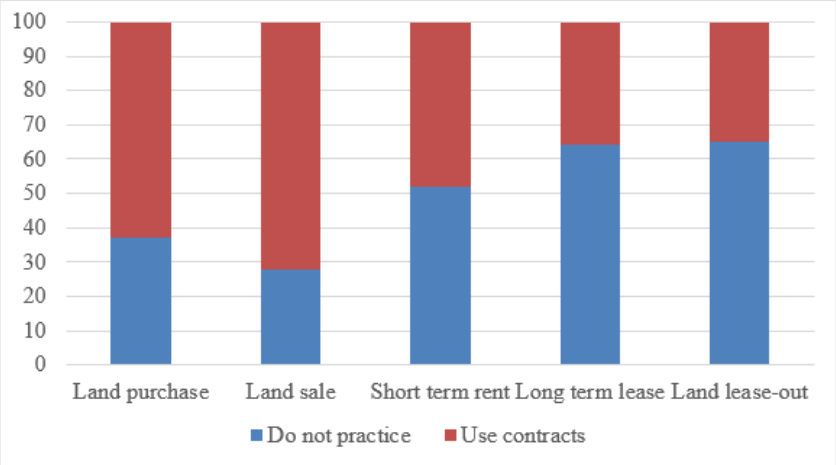


Figure 3. *Share of farms using different types of contracts for the supply of agricultural land (percentage)*
Source: Interviews with farm managers, 2023.

Slightly over 93% of the surveyed farms practice labor contracts. The dominant form of providing the necessary labor force in the majority of farms (97.1%) is permanent employment, with almost all of them being farm owners, and for a large part (43.9%) family members (Figure 4).

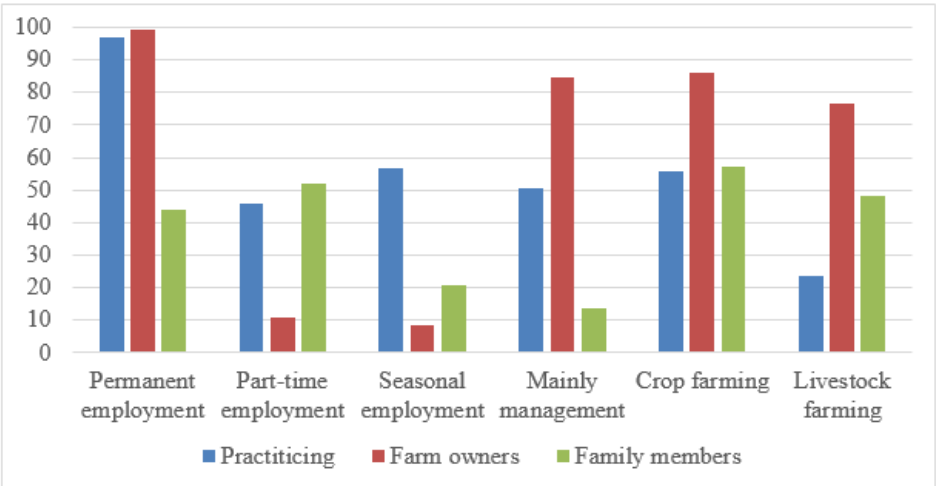


Figure 4. *Share of farms using different types of labor contracts (percentage)*

Nearly 46% of the farms use part-time employment contracts, with over half preferring family members. A form of seasonal employment is practiced by 57% of the farms, with the majority of this type of contract being with non-owners or family members.

Just over half of the farms surveyed use labor primarily for management, with the majority being the farm owners. Nearly 56% of all farms employ labor primarily in crop production, and just over 23% primarily in livestock production. Farm owners or family members are preferred for a large portion of these specialized activities.

The majority of the farms surveyed use an external provider of services necessary for the farm – respectively 91% for veterinary and medical services, 83% for training, information, and advice, 82% for fertilization and treatment with chemicals, 75% for maintenance of machinery and equipment, 64% for mechanized services, and 97% for some other type of service (Figure 5).

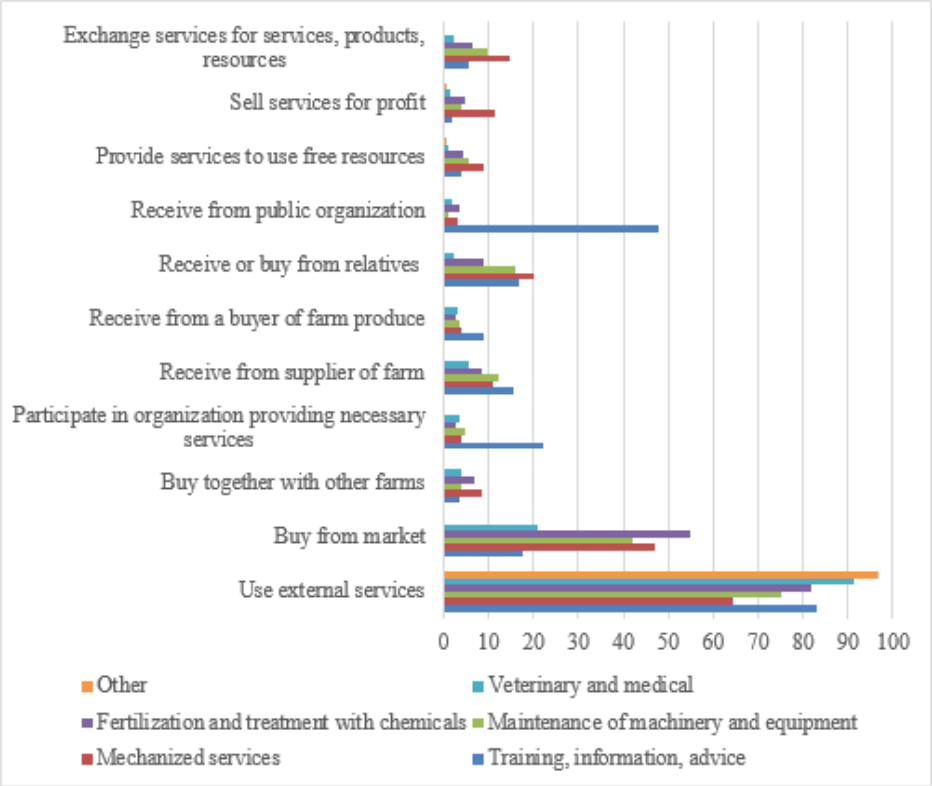


Figure 5. *Share of farms using a certain type of contract for receiving or providing different types of services (percentage)*

A standard or special contract for purchasing from a market supplier is the most widely used form, practiced by a large part of farms in terms of fertilization and treatment with chemicals (55%), mechanized services (47%), and maintenance of machinery and equipment (43%), and to a lesser extent in terms of veterinary services (21%), and training, information, and advice (17%).

Joint purchasing with other farms is a less common form, which is more important in mechanized services, and fertilization and treatment with chemicals – for about 9% and 7% of farms using external services.

A significant part of the surveyed farms (22.4%) receive the necessary training, information, and advice from an organization to which they are a member, and this form is less common for other types of services.

A significant proportion of farms receive the necessary services from a supplier of farm inputs, resources or finances through an interlinked contract "in a package" with the necessary services – 15.4% of farms in terms of training, information and advice, 10.8% for mechanized services, 12.3% for maintenance

of machinery and equipment, 8.5% for fertilization and treatment with chemicals, and nearly 6% for veterinary-medical services.

An interlinked contract for the provision of a service together with the purchase of the farm produce is practiced by about 9% of holdings in terms of training, information, and advice and to a lesser extent by the other farms.

A relatively large share of farms receive or purchase the services they need from relatives, including every fifth mechanized services, 17% training, information and advice, 16% maintenance of machinery and equipment, and 9% fertilization and treatment with chemicals.

The provision of necessary services by a public organization free of charge or for a certain fee or undertaking of some commitments is practiced by almost 48% of the surveyed farms.

Many farms provide services to others in order to use free resources or as a specialized activity aimed at profit, with this most commonly applied to mechanized services – by every ninth or eleventh of the farms, respectively.

A significant part of the farms provide the necessary services through a contract for exchange for services, inputs or resources, with this most commonly applied to mechanized services (15% of the farms) and maintenance of machinery and equipment (every tenth farm).

A significant part of the surveyed farms apply their own supply of the necessary long-term and short-term assets (Figure 6). The share of farms with internal (own) production of the necessary assets is particularly high in terms of buildings and equipment (27.2%), feed (22.9%), and seeds and planting material (13%).

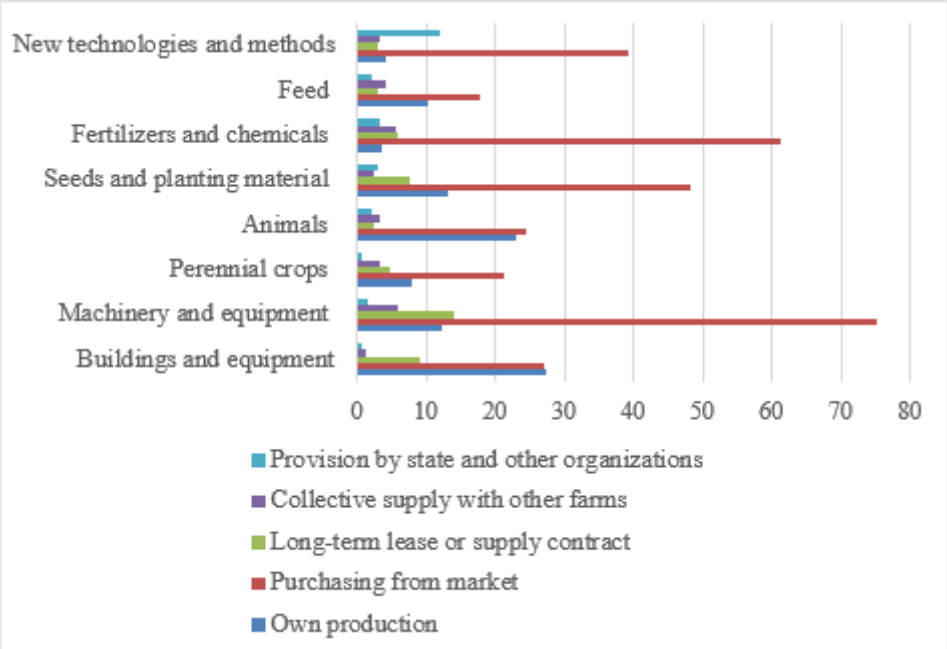


Figure 6. *Share of farms using certain modes to procure necessary assets and innovations (percentage)*
Source: Interviews with farm managers, 2023.

The main form of procurement of the necessary assets and innovations for the majority of Bulgarian farms is purchase from the market through a spotlight or standard contract – for three quarters of them in terms of machinery and equipment, for 61.2% for fertilizers and chemicals, for just over

48% for seeds and planting material, slightly more than 39% for new technologies and methods, for 27% for buildings and facilities, 24.4% for animals, 21.2% for permanent crops, and nearly 18% for feed.

A long-term lease or supply contract is used by a larger proportion of farms in terms of machinery and equipment (14%), buildings and facilities (9%), and seeds and planting material (8%).

A relatively small part of Bulgarian farms use some form of collective procurement of necessary assets and innovations, which is more common for machinery and equipment (5.8%), fertilizers and chemicals (5.5%), and feed (4.1%).

Provision by government and other organizations is used by nearly 12% of all farms for new technologies and methods, by almost 3% of farms for seeds and planting material, and to a small extent for other assets.

Only a small proportion of the farms surveyed reported that they did not need external financing for farm activities. At the same time, the majority of holdings need external funding to effectively finance their activities, including slightly more than 93% for long-term investments, nearly 85% for soil, water, air, biodiversity protection and climate change adaptation, 82.3% for short-term assets, and almost 76% for training, information, and innovation.

The main form of financing the activities of a large part of Bulgarian farms is savings or non-farm activities – for short-term or long-term assets for 31%, for training, information, and innovation for 21%, and for soil, water, and biodiversity protection and climate change adaptation for 16.3% of them (Figure 7).

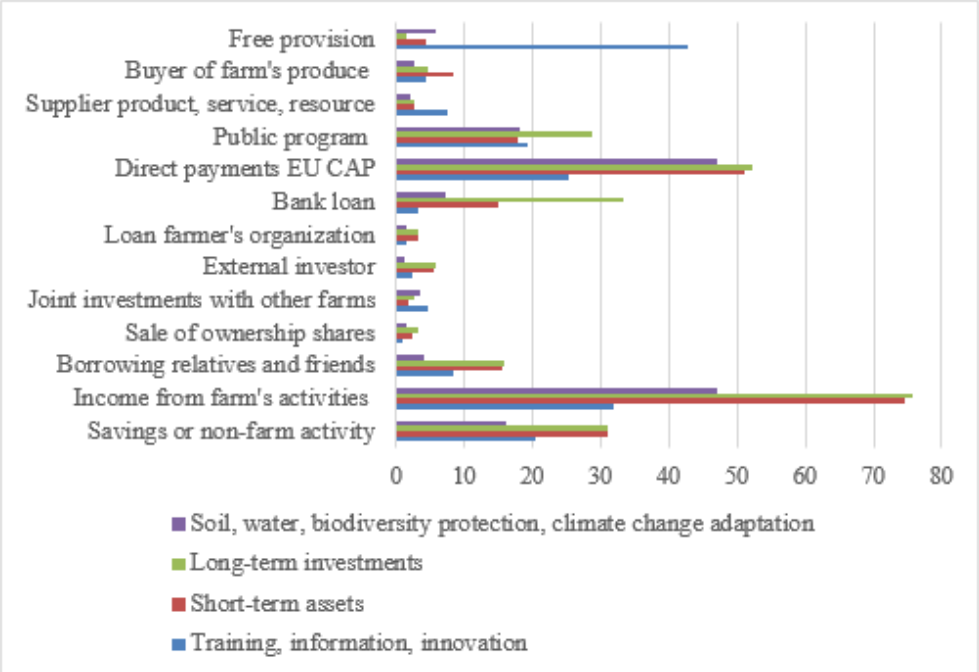


Figure 7. *Share of farms using certain modes to finance farm activities (percentage)*
Source: Interviews with farm managers, 2023.

Another important form of financing is the income from farm activities, as this source is of particular importance for 76% of farms in terms of long-term investments in material and biological assets, for slightly more than 74% of them for short-term investments, for nearly 47% of farms for financing soil,

water, biodiversity protection and climate change adaptation, and for almost 32% of them for financing training, information and innovation.

Direct payments from the EU CAP are a source of financing for long-term and short-term assets for 52.2% and 51% of all farms respectively, for soil, water, biodiversity protection and climate change adaptation activities for 47% of them, and for training, information and innovation costs for 22.2% of farms.

Participation in various public programs is a form of financing the long-term investments of 28.7% of Bulgarian farms, the costs of training, information, and innovation of slightly more than 19% of them, the activities for soil, water, biodiversity protection and climate change adaptation of 18% of them, and the acquisition of short-term assets of 17.7% of them.

The use of a bank loan agreement is a mode of financing the long-term investments of every third Bulgarian farm, the short-term assets of slightly more than 15% of all farms, and the costs for soil, water, biodiversity protection and climate change adaptation of 7.2% of them.

The application of a loan agreement with relatives and close friends and fims is practiced by nearly 16% of agricultural farms in terms of financing short-term and long-term assets, and 8.4% of them for financing their training, information, and innovation.

A loan from a farmer organization is used by just over 3% of Bulgarian farms to finance short-term and long-term assets, a negligible part of them for training, information, and innovation, and eco-management and adaptation.

The sale of shares in the ownership of the farm is a little used mode of funding, as it is important for 3.1% and 2.3% of farms respectively, to finance their long-term and short-term investments.

An external investor is a source of financing for the short-term assets of about 6% of Bulgarian farms, a very small part of them being for training, information, and innovation, and soil, water, biodiversity protection and climate change adaptation.

Joint investments with other farms are a way of financing training, information, and innovation for 4.6% of Bulgarian farms, activities for soil, water, biodiversity protection and climate change adaptation for 3.5% of them, and for a small part of holdings in terms of costs for acquiring short-term and long-term assets.

The majority of surveyed farms receive funding for training, information, and innovation from a supplier of a product, service, or resource (7.5%), and from a buyer of the farm's production for acquiring short-term assets (8.4%). Also, a significant share of all farms receive free provision of the necessary training, information, and innovation – nearly 43%.

A significant proportion of farms surveyed do not take any measures to prevent and minimize farm risk, including almost 32% for the risk of natural disasters, nearly a quarter for the risk of damage from wild animals, just over 20% for the risk of accidents to personnel or property, just over 17% for theft of property, almost 11% for market and contractual risk, and for price fluctuations, and just over 8% for the risk of diseases and pests of plants and animals.

A large proportion of farms maintain a reserve as a form of risk management, including nearly 45% to protect against market and contractual risk and price fluctuations, almost 21% to protect against the risk of diseases and pests of plants and animals, just over 17% to protect against the risk of

theft of property, nearly 16% to protect against the risk of natural disasters, just over 13% to protect against the risk of accidents to personnel or property, and just over 10% to protect against the risk of damage from wild animals (Figure 9).

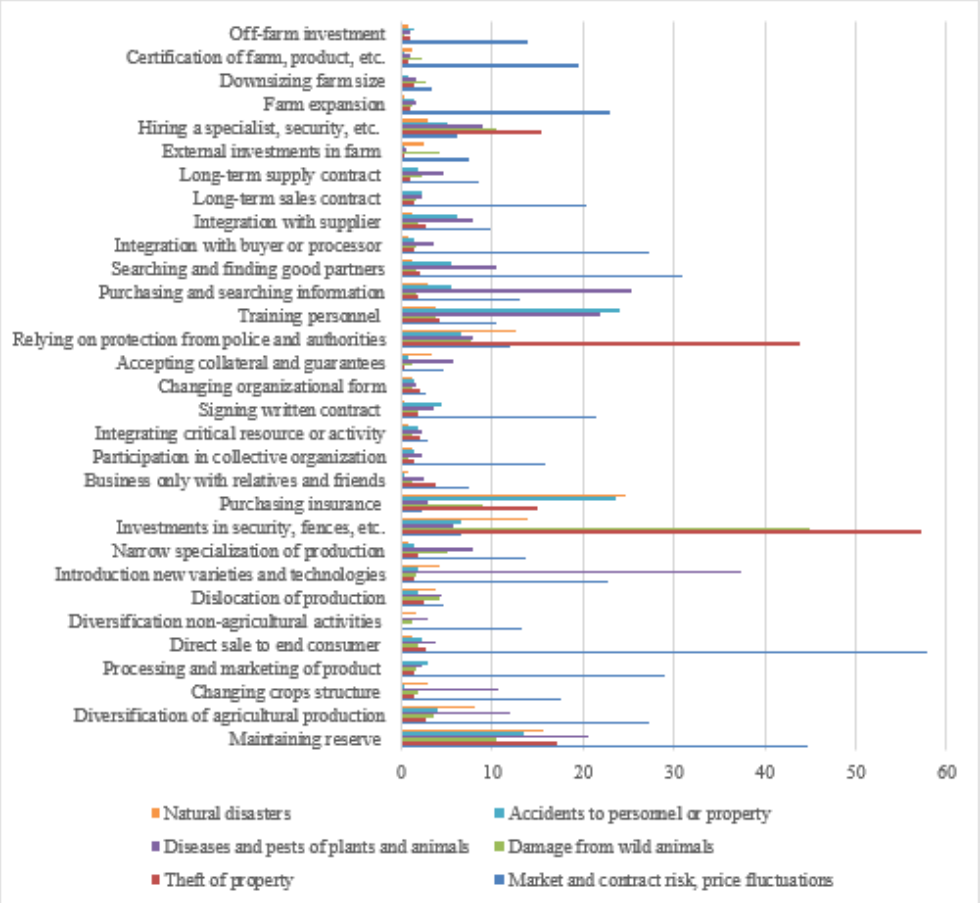


Figure 9. *Share of farms using certain modes to protect and minimize farm risk (percentage)*

Other main forms of protection and minimization of farm risks are diversification of production and change of crop structure, which are used by the majority of farms to manage market and contractual risk and price fluctuations (respectively 27.3% and 17.5% of all producers), and to protect against diseases and pests of plants and animals (respectively 12% and 10.8% of farms). Diversification of production is also applied to protect against natural disasters by slightly more than 8% of farms.

Along with this, diversification in non-agricultural activities is practiced by 13.3% of farms to minimize market and contractual risk, and protect against price fluctuations. On the other hand, narrow specialization of production is undertaken by 13.6% of farms to overcome the risk of market and contractual risk, and market price fluctuations.

Other important forms primarily for preventing and minimizing market and contractual risk, and price fluctuations are the processing and marketing of the product, and direct sale to the end consumer, which are applied by nearly 29% and 58% of Bulgarian farms, respectively.

The introduction of new varieties and technologies is an important strategy for preventing and minimizing the risk of diseases and pests of plants and

animals for 37.3% of farms, and for reducing market and contractual risk, and price fluctuations for 22.7% of them.

Investments in security, fences, etc. are a way to prevent and minimize the risk of property theft, damage by wild animals, and natural disasters for 57.2%, 45% and 14% of all farms, respectively.

Purchasing insurance or "selling the risk" is an important form for a larger share of farms in terms of protection against the risk of natural disasters (24.5), accidents to personnel or property (23.6%), theft of property (15.1%), and damage by wild animals (8.8%).

Other forms of protecting and minimizing market and contractual risk, and the risk of price fluctuations for a significant part of Bulgarian farms are signing a written contract (21.4%), participating in a collective organization (15.9%), and practicing transactions only with relatives and acquaintances (7.5%).

A large part of Bulgarian farms rely on protection from the police and the authorities to prevent and minimize risks to their farms, including property theft – 43.9%, natural disasters - 12.7%, market and contractual risk, and price fluctuations – 12%, diseases and pests of plants and animals – 7.9%, and damage from wild animals – 7.7%.

Staff training is an important form of managing the risk of accidents to personnel or property, diseases and pests of plants and animals, and market and contractual risk, and price fluctuations for 24%, 21.8%, and 10.4% of farms, respectively. In addition, some farms employ a specialist, security guard, etc. to protect against property theft (15.4%) and protect against damage from wild animals (10.4%).

Purchasing and searching for information, and searching for and finding good partners is practiced by a larger share of Bulgarian farms in terms of preventing and minimizing the risk of diseases and pests of plants and animals (respectively by 25.3% and 10.4% of farms), and of market and contractual risk, and price fluctuations (13% and 30.8% of farms).

Integration with a buyer or processor of farm produce, integration with a supplier of resources, products, or services, and the use of a long-term sales contract, signing a long-term contract for the supply of products or services, external investments in the farm, farm expansion, certification of the farm, product, etc., and investment outside the farm are important forms of protection against market and contractual risk, and price fluctuations for 27.3%, 9.7%, 20.4%, 8.4%, 7.5%, 23%, 19.5%, and 14% of all farms, respectively.

A relatively small share of farms use forms of risk management such as dislocation of production, integration of a critical resource or activity, change of organizational form, acceptance of collateral and guarantees, and reduction of farm activity.

A small share of the surveyed farms use their production for on-farm consumption, with most of them doing so with the produced fruits and grapes (9%) and vegetables (5.8%) (Figure 10).

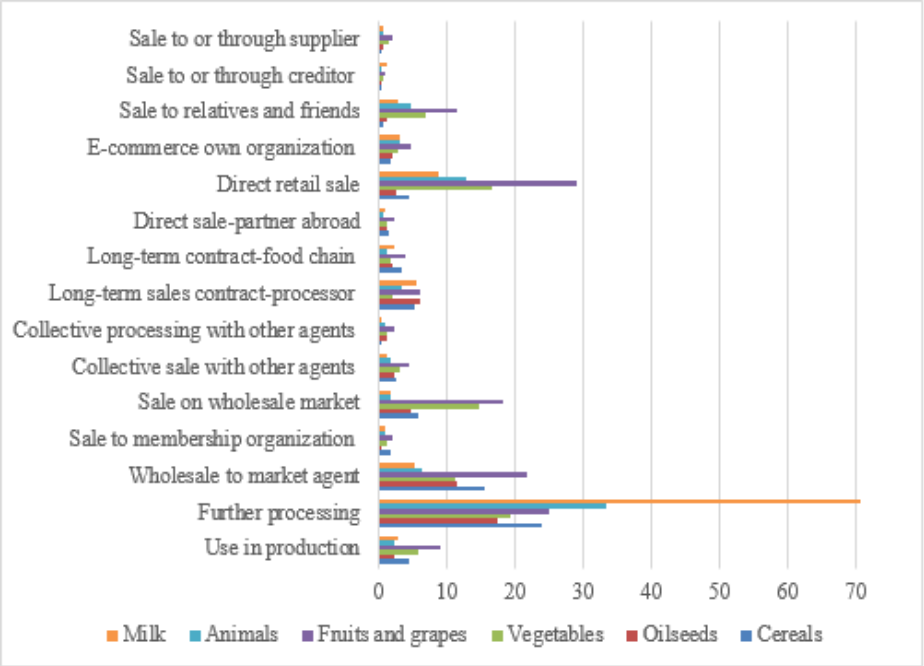


Figure 10. *Share of farms using certain modes of marketing their produce (percentage)*

At the same time, a significant part of the farms use their output for further processing – nearly 71% of the farms for milk, one third for animals, every fourth for fruits and grapes, 24% for cereals, just over 19% for vegetables, and just over 17% for oilseed crops.

Wholesale sales to a market agent are another main form of marketing of the produce of Bulgarian farms, and it is most common for fruits and grapes (21.7% of farms), cereals (15.6%), oilseed crops (11.6%), and vegetables (11.3%).

Sales on wholesale markets are practiced by the most farms for fruits and grapes (18.35) and vegetables (14.8%).

A long-term contract with a processor for the marketing of farm produce is used to a greater extent for fruit and grapes, oilseeds, milk, cereals - by 6.1%, 6.1%, 5.5% and 5.2% of farms, respectively.

A long-term contract with a food chain for the sale of produce is used to a greater extent in the marketing of fruit and grapes by slightly more than 4% of Bulgarian farms.

Direct retail sale of the produce produced by the farms is a widely practiced form of marketing, which is most common in fruit and grapes (29% of farms), vegetables (16.5%), animals (12.8%), and milk (8.7%).

E-commerce by the farmer or his organization is applied by a small part of Bulgarian farms, with their share being the largest in fruit and grapes - 4.6%.

Sales mainly to relatives and friends are a form of marketing of produce for the majority of holdings for fruit and grape farms (11.6%), vegetables (7%) and livestock (4.6%).

Other forms of marketing such as sales to an organization of which the farmer is a member, collective sales together with other farms and agents, collective processing together with other farms and agents, direct sales to a partner abroad, sales to or through the farm's creditor, and sales to or through the farm's supplier are practiced by a small part of Bulgarian farms.

A large part of the surveyed farms provide different types of ecosystem services (Figure 11). To the greatest extent, farms contribute to the preservation and improvement of soil fertility, the preservation and improvement of water purity, the preservation of natural biodiversity, and the preservation of traditional landscapes – 85.5%, 83.8%, 77.7% and 63.2% of all farms, respectively.

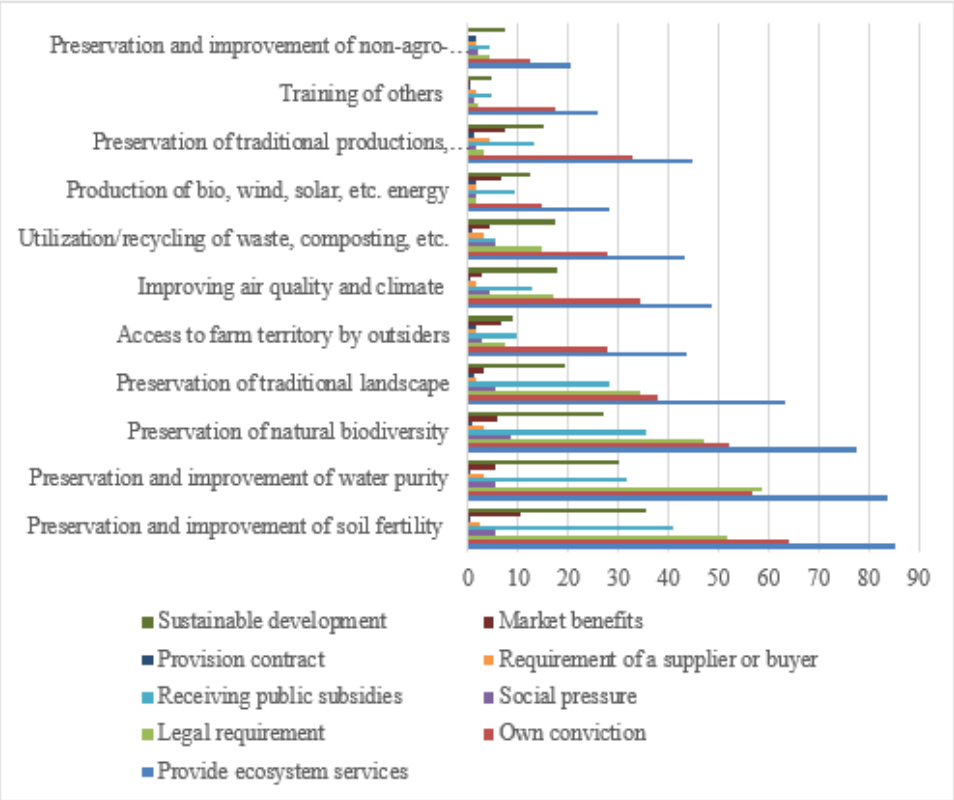


Figure 11. *Share and motivation of farms for providing different types of ecosystem services (percentage)*

A large share of Bulgarian farms also take measures to improve air and climate qiality (48.7%), preserve traditional productions, varieties, and breeds (44.9%), provide access to the farm territory for outsiders (43.8%), and use and recycle waste, composting, etc. (43.2%).

In addition, many farms produce bio, wind, solar, etc. energy (28.1%), train other people (25.8%), and contribute to the protection and improvement of non-agricultural ecosystems (20.6%).

The farmer's own conviction is an important factor in the provision of a large part of agro-ecosystem services, as it is important for the majority of farms in terms of preserving and improving soil fertility (64.1%), preserving and improving water purity (56.8%), preserving natural biodiversity (52.2%), preserving traditional landscapes (37.7%), improving air and climate purity (34.5%), preserving traditional productions, varieties, and breeds (32.7%), providing access to farm territory for outsiders (27.8%), and using and recycling waste, composting, etc. (27.8%).

Legal and regulatory requirements are another important factor motivating the production of ecosystem services on Bulgarian farms. It is indicated as an important factor by a large part of farms for the protection and improvement

of water purity (58.6%), protection and improvement of soil fertility (51.6%), protection of natural biodiversity (47%), and preservation of traditional landscape (34.2%).

Receiving public subsidies is a significant factor in stimulating the activity of a significant share of farms for the protection and improvement of soil fertility (40.9%), protection and improvement of water purity (31.6%), protection of natural biodiversity (35.6%), and preservation of traditional landscape (28.1%).

Sustainable development of the farm is reported as a motivation for the provision of ecosystem services by many farms for the protection and improvement of soil fertility (35.6%), protection and improvement of water purity (30.1%), and protection of natural biodiversity (27%).

For slightly more than 10% of farms, obtaining some market benefits is an important factor in stimulating their activities to protect and improve soil fertility.

At the same time, social pressure, the requirement of a supplier or buyer, and the presence of a special contract for provision are indicated as a factor in the provision of ecosystem services by a small part of Bulgarian farms.

The main contractual forms used by Bulgarian farms in the supply of the necessary resources and services and in the marketing of their products and services are summarized in Table 5.

Table 5. *Main types of contracts used by Bulgarian farms in the supply of necessary resources and services and in the marketing of products and services*

Functional area of the farm	**Main contract forms**			
	Market contract	***Special contract***	***Coalition contract***	***Public contract***
Suppky of land and other natural resources	Purchase	Long-term lease with fixed rent	Cooperation	Lease of state and public lands
	Short-term rent		Partnership	
		Long-term lease with share rent		Lease of reservoirs and irrigation systems
		Long-term lease with market rent		
Supply of labor	Daily hire	Permanent employment contract with fixed remuneration	Partnership	Public subsidies for hiring labor (disables, interims, COVID pandemic, etc.)
	Seasonal hire		Cooperation	
		Permanent employment contract with output based remuneration		
Supply of short-term material assets	Purchase with spotlight contract	Long-term supply contract	Cooperation	Public subsidies for short-term input purchase
	Standard contract	A supply contract interlinked with supply of credit, services, and/or purchase of farm produce		
Supply of long-term material assets	Purchase with spotlight contract	Long-term lease agreement	Partnership	Public subsidies for long-term input purchase
			Cooperation	
	Standard contract	Purchase agreement with crediting (leasing) and/or services (maintenance)		Leasing of state property
				Leasing of irrigation systems

Supply of services	Purchase with spotlight contract	Long-term supply contract	Partnership	Agricultural information and advice
	Standard contract	A supply contract linked with other services, products or credit	Cooperation	Training
Supply of innovations and know-how	Purchase with spotlight contract	Long-term supply contract	Cooperation	Scientific products and innovations
	Standard contract	Supply contract interlined with material assets and/or credit		
	Free consultation by Advisory System			
Financing	Bank loan	Joint-investment	Partnership	State program
	Loan from a private individual	Crediting interlinked with supply of material assets and services	Credit Cooperative	International program
	Loan from a private organization	Grants from private individuals and organizations (charity, NGOs, etc.)	Grants from collective actions by private individuals and organizations (charity, NGOs, etc.)	CAP subsidies based on utilized agricultural land, livestock heads, etc.
Insurance	Purchase of an insurance policy	Insurance interlinked with material assets supply	Cooperation	Public reserve fund
	Purchase of an "insurance service"	Long-term insurance contract	Collective insurance	
Marketing of farm products and services	Retail sale	Long-term marketing contract	Partnership	Public marketing contract (military, state reserve, school lunches, etc.)
	Wholesale			
	Standard Contract	Interlinked marketing contract against crediting, supply of material assets and/or services	Cooperation	
	Digital Marketing	Trade in organic, eco, etc. products with independent certification and audit	Коопериране	
Provision of services with collective and public good character	Retail sale	Membership contract	Partnership	Public eco-contracts
		Long-term contract with a private organization	Cooperation	Cross-compliance requirement for participation in public support program
		Long-term contract with a non-governmental or other organization	Collective codes of behavior	

5. Governance modes in the main functional areas of farm management

The application of the same approach (methodology, questionnaire) in the present and previous study in 2001 (Bachev & Terziev, 2001, 2002; Bachev & Tsuji, 2001) provides a real opportunity to assess the fundamental evolution of governing modes in Bulgarian agriculture over the past two decades.

The main forms of governing of resource supply and marketing of produce in agricultural holdings have changed significantly over the past twenty-five years (Table 6). At the beginning of the century, there were a huge number of smaller farms, including a huge "semi-market" sector and subsistence farming, based mainly on limited family resources and fragmented plots of own lands. The main form of acquiring ownership of agricultural land and long-term

assets was the restitution and privatization of agricultural lands and assets, as a result of the liquidation and privatization of the old public farms (APK, TKZS, DZS, etc.). Private property rights to land and other resources, services, waters, etc. were not fully defined, and completely restored "within real boundaries", well contested and adequately enforced. Therefore, seasonal (annual) lease contracts with hundreds and thousands of landowners and partnerships with small membership (joint cultivation of land and use of large scale assets such as orchards, vineyards, irrigation and other facilities) were the dominant (most effective) forms of farm expansion.

Table 6. *Evolution of agrarian governance in Bulgari*

Characteristics	Pre-accession period (2000-2001)	Present (2023-2024)
Private property rights	Unspecified, temporary, disputed, individual and family ownership, small scale, farmland ownership restricted to Bulgarian citizens, main form of land supply, no private rights to water and other natural resources, large farms without ownership of the land, significant share of underutilized or unused agricultural lands, unregulated access to public lands	Established, legally enforced, farmland ownership open for EU agents, diverse form of ownership (organizational, non-agricultural agents, international), concentration in small and large structures, one of the alternative forms of land and resource supply, new private rights to waters, ecosystem services, intellectual products, geographical origins, land scarcity in certain areas, contracts for use of public lands
Farming structures	Numerous, in the process of development, low efficiency and sustainability, small size, based on own and family (land, labor, savings) resources, strong cooperation in land use, high degree of self-sufficiency, survival strategy, widespread occasional and part-time employment in agriculture	Reduced number of agricultural holdings, more formally registered farms, less importance of unregistered and cooperative farms, established, highly efficient and competitive, intensive external market and private supply of (land, labor, financial, innovation) resources, inputs and services, diverse type of coalitions, long-term development strategy, professional farmers
Markets	Underdeveloped, missing, fragmented, informal, lack of adequate infrastructure, primitive and personalized exchanges and clientalisation, monopoly positions, insufficient and asymmetric information, lack of public support and regulations	Well-developed markets for resources and products, competitive, modernized infrastructure, open to the EU, officially registered and reported transactions, publicly supported, regulated and sanctioned (standards, rules, etc.), intensive impersonal exchange, specialized agents, reduced asymmetry of market information
Modes of resources supply	Ownership, provisional property rights, seasonal and annual lease contracts, joint land cultivation and assets use, quasi and fully integrated, limitation on maximum size of land ownership and leased lands, no incentives for long-term investment in land, casual transactions between friends, family members and closed communities, illegitimate use of private and public lands and assets	Ownership and joint ownership, purchase and sale, short-term rent, long-term lease, collective cultivation, cleat and simple forms, strong incentive for investments in land and farm improvement, specificity in protected areas and territories, intensive negotiation depending on the specificity of the assets and the needs for farm expansion, informal forms on a smaller scale and in remote areas
Type of contracts and prices	Informal, standard ("classic"), complex and hybrid (interlinked) forms, privately enforced, payment of rents and other in kind, delayed, reduced or non-payments of promised rents, salaries, interests, and other obligations	Written, formally registered, legally enforced, publicly regulated (form, terms, period, registration), tailored to the needs of agents (special, "neoclassical"), paid in cash, governed by trust and reputation, assisted and enforced by a third (private or public) party
Institutional environment	In the process of evolution and harmonization with the EU, high (institutional, market, behavioral) uncertainty, dynamic and (often) contradictory changes, outdated and poorly implemented environmental standards, lack of sufficient public support, high corruption	Modernized according to the EU standards, huge public support through the CAP (subsidies, credit, training, market information, etc.), CAP payments based on utilized agricultural area, cross-compliance requirements (including environmental and biodiversity protection, etc.), improved enforcements and punishment of violators
Transaction costs and factors for farm development	Low transaction costs for land supply, very high overall transaction costs, the most critical factors - high costs for enforcement of contracts, credit supply and marketing the produce	Moderate or low transaction costs for land supply, most critical factors - legislative and regulatory environment, high costs for labor supply and supervision, high costs for inputs and finance supply, and marketing of produce, for registration and certification, presence of informal and gray sector, socio-economic situation in the region and country

Most markets were underdeveloped and dynamic, while governance structures were highly unstable (part-time farming, numerous failures, bankruptcies, mergers, takeovers, temporary organizations undergoing privatization, short-term contracts, cash-and-carry deals, etc.). Many new agents emerged without a history, reputation, or strategy to remain in agriculture. Market, institutional, and behavioral uncertainties were enormous and prevented potentially mutually beneficial exchanges between entrepreneurs, resource owners, and consumers.

There was no effective public system for enforcement of laws and contracts, and informal private (unregistered, illegitimate) forms of resources supply and transaction protection were widespread – interlinked modes (e.g., land supply against marketing of produce), barter transactions, personalized (rather than impersonal market) exchanges, private enforcement forms, illegal use of private and public lands and resources, etc. Land sales and long-term lease markets were practically absent and the implementation of such forms of land supply and associated long term investments in lands was very rare.

Transaction (information, implementation, enforcement, learning from mistakes, etc.) costs associated with external resources supply (and other farm transactions) were very high due to the rapid modernization of the institutional environment (introduction and implementation of EU laws and regulations, numerous changes and amendments to regulatory documents and state institutions), market liberalization, inadequate market infrastructure, low efficiency of the system for enforcement of private contracts, restructuring of agricultural structures and production, little management experience of farmers, primitive technologies, insufficient public support (training, advice, subsidies), monopoly positions of state or private agents, widespread corruption, etc. Furthermore, effective optimization of farm size was severely limited by the high costs of enforcement of contracts in general, and by the enormous costs of credit supply and marketing the produce.

The study found that the critical factors (and transaction costs) that strongly limit the development of many Bulgarian farms at the current stage of implementation of the EU CAP are: the legislative and regulatory framework in the country and the sector, the cost of finding the necessary workforce, the cost of managing hired labor and workers on the farm, the cost of finding the necessary land and natural resources, the cost of finding the necessary short-term and long-term assets, the cost of finding the necessary financing for the farm, the cost of finding the necessary innovations, the cost of marketing the farm's products and services, the cost of registration, certification, etc., the presence of an informal and gray sector in agriculture, and the socio-economic situation in the region and the country (Figure 9). In the period before accession to the EU, the main factors limiting the development of agricultural holdings were the high costs of securing bank credit and selling the produced outputs.

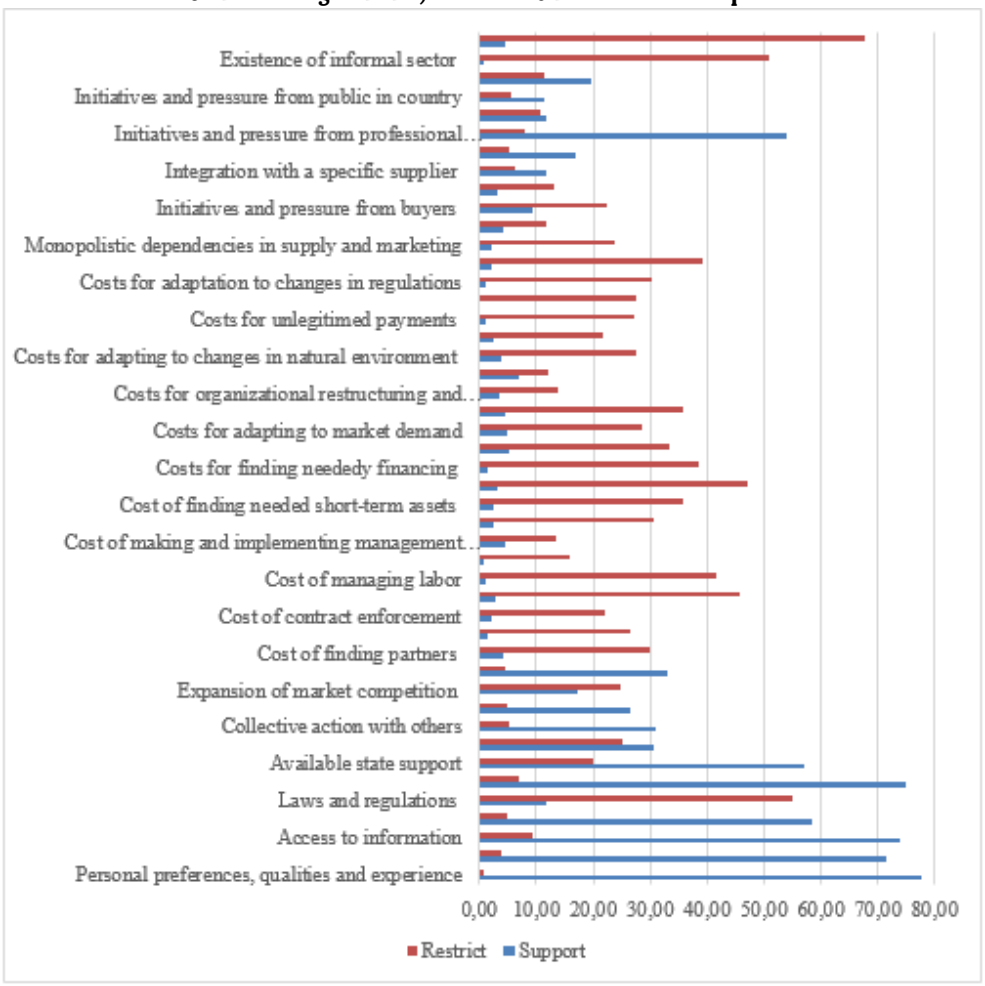


Figure 9. *Factors strongly supporting or limiting the development of Bulgarian farms (percentage of farms)*

6. Conclusion

There has been an unprecedented development in the governance of the supply of resources, services, innovations and marketing of products of Bulgarian farms over the last two decades. However, due to insufficient (statistical, official, etc.) information and traditional inadequate (Neoclassical Economics, Agent Theory, etc.) approaches to analysis, there is no complete knowledge of the dominant forms and driving factors of governance in the main functional areas of farm management. This hinders the efficient decision-making at all levels - from the management of agricultural holdings and agrarian business and the formation of their strategies to collective actions, the involvement of third parties (local authorities, non-governmental organizations, etc.), and the development and implementation of government and EU policies.

This study has proven that the methodology of the New Institutional Economics allows for a better study and understanding of the real agents, forms, processes, resulted order, efficiency and progress of (specific and overall) governance of the agrarian sphere. Therefore, it should be used more widely and periodically in economic analyses at different levels – farms of different types, sizes and locations, international comparisons, etc.

The application of the proposed holistic approach requires the collection of a new type of (micro)economic data on important characteristics of agricultural agents, the different forms of governance of their activities and relations, and critical dimensions and costs of transactions. This requires significant changes in the official information collection system in the country and the EU (national and international agricultural statistics), greater cooperation of different stakeholders (farm managers, professional organizations, the National Agricultural Advisory Service, state and international agencies), and the application of more holistic and interdisciplinary approaches in economic analysis by scientists, experts, professional organizations and public agencies.

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Validation	X			
Formal analysis	X			
Investigation	X			
Resources	X			
Data curation	X			
Writing –original draft	X			
Writing –review & editing	X			
Visualization	X			
Supervision	X			
Project administration	X			
Funding acquisition	X			

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