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Assessment of governance and overall efficiency of Bulgarian farms

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Abstract. This article incorporates the New Institutional and Transaction Costs Economics framework and suggests a practical approach for assessing the level and factors of governance and overall efficiency of Bulgarian farms. The evaluation is made on the basis of original micro-data collected by the managers of typical farms of different types and location. The "Nature of the problems in effective organization for major class farm transactions for securing needed factors of production and marketing of output" is used as an indicator for the comparative efficiency and adaptability (equal, lower, or greater to another farm/s or organisation/s depending on the extent of transacting difficulties) of individual farms. The study has found that the governance efficiency of farms is at a Good level but 60% of all farms in the county are with a Low efficiency and will likely cease to exist in near future. Major factors for inferior governance efficiency of Bulgarian farms are unsatisfactory efficiency in Supply of Necessary Labour, Innovations and Know-how, and Funding. There is a huge variation in the level and factors of governance efficiency of farms with different juridical types and sizes as well as in the share of farms with different levels of efficiency in each particular group. Furthermore, a strong correlation has been found between the level of governance efficiency and adaptability of farms, and diverse critical internal and external market, technological, institutional, personal, etc. factors that could feasibly increase the competitiveness of holdings. The study has proved that there is a big discrepancy between the new assessments of Governance efficiency with dominating traditional approaches for farm efficiency assessments based on factors' productivity. The study has also found that there was an improvement in the overall governance efficiency of Bulgarian farms compared to 2016. Nevertheless, the share of (good and high) efficient farms significantly declined during the same period. The suggested approach has to be further improved, and widely and periodically applied in economic analysis at various levels which require the systemic collection of a novel type of micro-data on farms governance and transaction costs..
Keywords. Governance; Efficiency; Farm; Transaction costs; Factors, Bulgaria.
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1. Introduction

In recent years there have been renewed academic, business, and policies debated about the efficiency of farms and agrarian organizations, the "future of agriculture", and prospects and contribution of different farming structures (Bachev, 2010a; Davidova & Thomson, 2014; FAO, 2021; Hoppe, 2021; James, Klein, & Sykuta, 2011; Massey, Sykuta, & Pierce, 2020; Sykuta & Cook, 2001). Numerous publications have appeared suggesting the "right" approaches for defining and evaluating the economic efficiency of farms as well as multiple assessments of efficiency levels in different

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countries, subsectors, types of farming organizations, ecosystems, etc. (Abdulai & Huffman, 2000; Asfaw, Geta, & Mitiku, 2019; Chetroiu & Călin, 2013; Combary, 2017; Debebe, Haji, Goshu, & Edriss, 2015; Gaviglio, *et al.*, 2021; Gunes & Guldal, 2019; Guth & Smędzik-Ambroży, 2020; Habtamu, Lien, & Hardaker, 2018; Hakim, Haryanto, & Sari, 2021; Skarżyńska, 2019; Tesema, 2021; Maurice, Adamu, & Joseph, 2015; Masterson, 2007; Masuku & Belete, 2014; Okoruwa, Akindeinde, & Salimonu, 2009).

Despite the progression of the theory of economic organizations in the last decades (Bachev, 2004; Furuboth & Richter, 2000; Ciaian, Pokrivcak, & Drabik, 2009; James, Klein, & Sykuta, 2011; Sykuta & Cook, 2001; Williamson, 1996), the farm predominately is studied as a "production structure" and its efficiency is assessed through traditional indicators for "technical", "production", "factors", "resources", "accountancy" etc. productivity. Significant factors affecting a farm's efficiency, such as transaction costs and capacity for adaptation to the market, institutional, technological, and natural environment, have been ignored in the economic analysis. Consequently, many "strange" phenomena associated with farming evolution around the globe stay unexplained such as: why in a particular country, subsector, and region there is a huge variation in the levels of "economic" efficiency of farms; why for a long period of time there exist so many highly sustainable farms with "unsatisfactory" (low) productivity and efficiency; why farming adjustments is often associated with the transfer of resources management to "less efficient" (low productive) structures; why there are farms/firms and diverse agrarian organizations at all. In Bulgaria for instance, there has been enormous differentiation in the factor's productivity of individual farms, and holdings of different sizes, juridical types, product specialization, and geographical locations (Koteva, 2014; Kopeva & Ivanova, 2008; Zaimova, 2011). Furthermore, the ongoing restructuring of farming structures has been associated with the rapid transfer of resources management into larger agro-firms and cooperatives, and a significant decrease in the number of farms - one quarter in 2007 compared to 2003, and 73% by 2020 compared to 2007 (MAFF, 2021).

The interdisciplinary New Institutional Economics is a rapidly evolving methodology, which allows better understanding and assessing the efficiency of diverse forms of farms and agrarian organizations (Bachev, 2004; Furuboth & Richter, 2000; Mugwagwa, Bijman, & Trienekens, 2020; Sykuta & Cook, 2001; Valentinov & Curtiss, 2005; Williamson, 1996). It studies farms (not only as a production but) as a governance structure – as a form for the organization (governing) of agrarian transactions and minimization of transaction costs. In the last decades, in Bulgaria (Bachev, 2004, 2006, 2009, 2010b, 2016; Bachev & Nanseki, 2008; Bachev & Terziev, 2017, 2018; Bachev & Tsuji, 2001; Georgiev, & Roycheva, 2017; Radeva, 2017; Terziev, Zhou, Terziyska, Zhang, 2018; Terziyska, 2016) and internationally (Ciaian, Pokrivcak, & Drabik, 2009; Demir, 2016; Foster & Rosenzweig, 2022; Huy *et al.*, 2016; Massey, Sykuta, & Pierce, 2020; Mack *et al.*, 2019;

Mugwagwa, Bijman, & Trienekens, 2020; Westerink *et al.*, 2017) there have been multiple studies incorporating this novel framework into the analysis of various governing structures in agriculture: different type of contractual arrangements, forms of farming organizations, modes of public intervention, farms sustainability and competitiveness, environmental and risk management, etc. In the majority of cases, the research on governance efficiency of farms is at a "theoretical" level, while few empirical studies focus on "critical factors" of transaction costs or their past (historical) rather than the current (and future) level. A well-known reason for that is the lack of any statistical, accountancy, farming, etc. data on diverse transaction costs, and diverse modes of governance in individual farms. In addition, most of the absolute and comparative transaction costs associated with farm governance are not easily identified, measured, or separate from traditional "production costs".

This article incorporates the achievements of the New Institutional Economics and suggests a practical approach for assessing the level and factors of governance efficiency of Bulgarian farms as a whole and of different juridical types and operational sizes.

2. Methodology

2.1. Theoretical background

The New Institutional Economics studies farms and other economic organizations in agriculture as governing structures, and modes for minimization of production and transaction costs, and for maximization of production and transaction benefits (Bachev, 2010a; Bashev, 2012). It turns individual transactions into a basic unit of economic analysis, identifies alternative modes for governing transactions and activity (market, contract, internal, collective, hybrid, etc.), and assesses the efficiency of alternative (discrete) governance structures in a comparative (mainly transaction costs minimizing) way (Bachev, 2004; Williamson, 1996). What is more, it has been proved that the efficient boundaries (size) of a firm (an agricultural farm) is eventually determined by the transaction costs minimizing reasoning rather than technological (production costs) factors (Williamson, 1996). In Bulgaria for instance, there is no case of a minimum size of a farm that is (pre)determined by a technological factor e.g. a particular technology, technological non-separability, etc. Even an individual animal (e.g. a cow) could be managed by two or more independent farms (firms) – one feeding it, another milking it, the third selling out the milk, the fourth taking care of the cow's health and product safety, fifth raising calves, etc., and all transactions between involved agents governed through the market (contracts). Similarly, the domination of large complex, and diversified structures (agri-corporations, holdings, cooperatives, etc.), some reaching tens of thousands of ha, could be hardly explained by the technological need to explore the economy of scale and/or scope (Bachev, 2006, 2010b).

Modern farming is associated with significant transaction costs – for finding needed land, labor, finance, etc. resources and securing effective supply (searching suppliers, negotiating prices and terms of purchase, rent, or hiring, contracting, enforcement and disputing contractual terms, protection of property, etc.), for coalition and managing relations with other agents (finding best partners, building partnership, formal registrations, coordination, controlling opportunism, organizational development, etc.), for marketing of farm products and services (finding best prices and buyers, negotiating, contracting, payments of fees and commissions, unused output, etc.), for adaptation to constantly changing market, institutional, technological, and natural environment (studying and compliance with environmental, quality, safety, etc. standards, finding and introducing innovations, participation in public support programs, payments of bribes and fees, etc.).

Following Coase's transaction costs economizing logic, the farm is considered efficient if it governs all its transactions and activity in the most economical (equally or more efficient) way compared to other feasible organization(s) - another farm(s), organization(s), public, hybrid, etc. modes (Bachev, 2004; Bashev, 2012). On the other hand, the farm is inefficient if it is: (1) oversized and carries costlier compared to another organization transactions and activity; or (2) undersized and it does not internalize highly efficient compared to another farm(s) or organization(s) transactions and activity. For instance, if a crop farmer purchased an expensive combine (low costs of funding through state support program) but have a high cost to supply needed farmland, labor force, and/or selling excessive capacity (providing harvesting service and renting out the combine) to optimize factors of production, it is inefficient, and vice versa. In addition, if the farm adaptation potential to permanently changing market, institutional, technological, and natural environment are good, its governance (and overall) efficiency is high. That is because it overcomes easily (low or no transacting costs) existing and other possible (future) transacting difficulties in resources supply and marketing exploring fully production (technological) possibilities and moving to the most effective state (size adjustment, alternative governance, etc.) (Bashev, 2012; Bachev, 2018). Alternately, if the adaptability of a farm is low it is not able to reach the equal or more effective state/size of (resources supply, internal organization, and marketing of output) transacting compared to another farm(s) and organization(s). Therefore, its governance efficiency and productivity of factors are low.

Farmers and other agents use a great variety of mechanisms and modes for governing their relations, transactions, and activity – free market (market prices and market competition), contract, internal (private order), collective action (cooperation), hybrid (e.g. involvement in the public program), etc. If all functional areas of farm governance (all relevant transactions and activity) are associated with equal or fewer costs compared to the external governance (e.g. another farm or organization), then the analyzed farm is

efficient. Alternatively, if some or all of the functional areas of farm governance command higher costs compared to another form of governance (another farm or organization), then the analyzed farm is inefficient.

"Rational" agrarian agents (farm entrepreneurs, suppliers of resources and services, buyers of farm produce, etc.) tend to organize their relations (transactions) and activity through the most efficient mode(s) of governance (Williamson, 1996; Bachev, 2010b). One extreme is when a farm entrepreneur specializes only in the management of farm transactions and organizes external supply of all needed agrarian resources, buys all needed production operations (technological activities) as services, and markets the entire output through the free market. For instance, the manager practices short-term rent of land, buys all cultivation services (plowing, fertilizing, plant protection, risk insurance, harvesting, transportation, etc.), and (spotlight) sells output at the wholesale market.

Another extreme is the close subsistence holding when a farmer uses only owned land, labor, savings, does all production operations, and consumes the entire output. Between these two extremes there are a great variety of forms for governing farm transactions, activities, and resources (farm sizes and types) aiming to explore technological possibilities (economy of scale and scope, minimize production costs), economize on (market, contract, internal, coalition, etc.) transaction costs, and maximize production and transacting benefits (income, market positioning, overcoming unilateral dependency, etc.). The efficient size and type of a particular farm will be determined by the comparative efficiency of the organization of agrarian transactions, activity, and resources in that farm in comparison to the organization of the same transactions, activity, and resources in another farm(s) or organization(s). That is the situation when all transactions and activity in the farm and the sector are carried out with minimum total (transaction and production) costs. On the other hand, if the farm organizes its transactions, activity, and resources at higher costs compared to another farm(s) or organization(s), then there will be a potential to increase efficiency through transferring certain transactions, activities, and resources to external governance (another farm, organization, free market, etc.).

Unfortunately, described "logic" of economic efficiency of farms is theoretically easily justified but still very difficult to operationalize and practically applied. However, assessment "difficulties" associated with the transaction costs and governing modes is no excuse to overlook these important features (the essence) of farm efficiency. This study just suggests one of the possible ways (approach) to start dealing with that important economic problem.

2.2. Method and data

In Bulgaria, like in other countries around the globe, there are no available statistical or other data about the structure and level of transaction costs in agriculture, nor about most of the dominant modes for governing agrarian transactions (formal land lease and sell contracts, and formal labor contracts

being an exception). Furthermore, there have been no successful attempts for mass collection of such data and evaluating (measuring) and comparing directly the total costs of each individual transaction of the farms and other agrarian organizations. The latter is quite difficult, too costly, or most often practically impossible - e.g. separation of the transaction from pure "production" costs, simultaneous and/or interlinked organization of transactions, etc.). That is further complicated by the high specificity depending on: the skills (ability) of individual farm managers, multiple and interlinked characters of governance, the unique conditions of farm production, exchange, and external environment, etc. The same is true for the adaptation capability of individual farms and other agrarian organizations which assessment is still a great challenge for economists.

In this study, another approach for assessing the comparative transaction costs of farms is suggested and experimented with. First, instead of evaluating transaction costs of each individual transaction, the transaction costs of each class of farming transactions are assessed – these are related to effective supply and management of needed resources (land, labor, inputs, finance, innovation), and marketing of produce and services (Figure 1). It is well known that even the founding fathers of the New Institutional Economics (Coase and Williamson) evaluated alternative governance structures not in terms of an individual transaction but for a type of transactions (e.g. outside transactionS are internalized into a firm if they are associated with high asset specificity, frequency, and uncertainty (Williamson, 1996).

The aggregate assessment of all classes of transactions is not a shortcoming of the applied method since if the governance of a particular transaction fails but it is effectively replaced by another mode(s) of governance (e.g. a market mode such as a bank loan is replaced with an inputs supply interlinked with crediting), the effective governance of a particular resource, activity, etc. is secured and overall efficiency achieved. What is more, each class of transactions of farms usually comprises of a certain type or few types of transacting – e.g. a labor hire contract, a short-term lease for land, a marketing contract with a processor or standard sells on wholesale market, etc. Consequently, if the governance of all major functional areas of the farm (class of transactions and activity) is effective, then both the overall transaction costs of the farm and the "combination of factors of production" (production costs) are optimized, and vice versa.

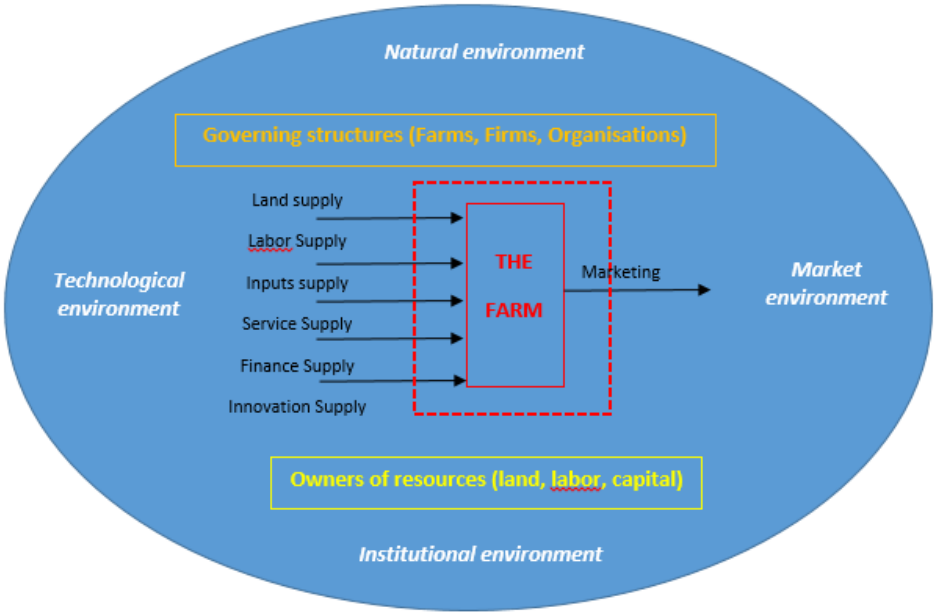

Figure 1. *Factors of Governance Efficiency of the Farm*

Second, on the basis of multiple case studies, in-depth interviews with farm managers, and expert assessments, "the best" (easily understood, measured, and representative) quasi indicators for governance efficiency of farm transactions have been selected – namely "problems for effective organization of needed class of transactions and activity". For instance, serious difficulties say in the supply of needed labor or marketing (shortage, high costs, lack of long-term commitment, competition with other producers and/or import, etc.) of a particular farm means that another farm(s)/firm(s) or organization (s) govern more effectively available resources (labor, etc.) than the analyzed farm.

Here correlation with the farm comparative transaction costs, production costs, and adaptation potential are significant. Thus, "measurement" problems are overcome through the assessment of relative costs for the organization of a particular class of transactions in the analyzed farm compared to other possible organizations (e.g. another farm, another organization, free market, etc.). There is no other agent (e.g. researcher, expert, etc.) but the manager of each farm who knows well (easily specified through learning by doing) the particular production and exchange conditions of his/her holding, including the amount of required outside exchanges, farm's needs for governing relations (coalition, contracting, etc.) with other agents, internal needs for the combination of factors of production, the severity of problems in the governance of inputs supply, internal organization, and marketing, opportunities and restrictions for the farm development from evolving market, institutional, natural, etc. environment.

Necessary microdata for the assessment of efficiency of Bulgarian farms is collected through a large scale survey of farm managers carried out with the assistance of the National Agricultural Advisory Service and the major

producers' organizations in the fall of 2020 and involving 319 managers of "typical" farms of different types, production specializations, and geographical locations. The surveyed farm accounts for 0.42% of the registered agricultural producers in the country and their structure approximately corresponds to the real structure of the farms in Bulgaria.

Individual farm managers were asked about the "Nature of the problems in the effective organization" for every major class of farm transactions for securing needed factors of production and realization of output, including the "Effective supply of necessary for the farm land and natural resources", "Effective supply of necessary for the farm labor force", "Effective supply of necessary for the farm materials, equipment, and biological resources", "Effective supply of necessary for the farm funding/finance", "Effective supply of necessary for the farm services", "Effective supply of necessary for the farm innovations and know-how", and "Effective marketing and utilization of farm products and services". The keywords here are effective and needed for the farm, which implies that both production and governance efficiency is achieved – the necessary for the farm resources supplied, the combination of the factors of production optimized (production costs minimized and output maximized), all products utilized or sold, all possible adaptation made, associated transacting costs minimized and transacting benefits maximized.

The surveyed managers are asked to evaluate the extent of the problems for the effective organization of each class of transactions in their particular farm as "Significant", "Normal" or "Insignificant". The "Significant" problems in the effective organization of a particular type of "necessary for the farm" transactions indicate that (a) the specific inputs supply, and/or combination of the factors of production, and/or the marketing and utilization of output is not carried out or governed at the effective scale (e.g. under or distracted supply of needed resources, not optimized factors of production and technology, unsold or unutilized produce, etc.); and/or (b) it is organized more costly (inefficiently) comparing to other possible organization (e.g. another farm or organization). In either case, it means high transaction costs and low (non) efficient governance. Accordingly, the "Normal" problems correspond to normal transaction costs and good governance efficiency, while the "Insignificant" problems are a quasi-indicator for the low transaction costs and high governance efficiency.

Furthermore, the classification as Significant also indicates that the farm adaptability is low since neither adequate adaptation has been made nor further adaptation is possible to achieve the state of farm efficiency. Consequently, the evaluated farm governance efficiency is considered to be low and it will unlikely sustain in a long term independently from the registered actual level of factors productivity in that holding (e.g. high, normal or low level of "technical" productivity of labor, land, etc., "profitability" of costs and capital, etc.). Such a farm does not have the adequate potential for adaptation to get to the effective state of organization of (all of its) transactions exploring the existing potential to increase

efficiency and carry all transactions in the most effective way (equal or better than other farm or organization). That farm is incapable to change the governing modes (e.g. direct marketing with long-term sales or interlinked contract) or otherwise optimize transactions (for instance, replacing one type of transaction and resource with another type like in the case of labor with services or mechanization), or reduce farm size and the overall size of governed transactions, activities and resources (e.g. stop using services or certain inputs).

Thus it is not efficient in governing transactions, activity, and resources, and likely cease to exist in near future due to failure, takeover, merger, or another type of organizational modernization (restructuring, changing into the firm mode or corporation type, vertical integration, cooperation, etc.). Similarly, "Normal" and "Insignificant" problems correspond to the good and high governance efficiency of the farm.

Therefore, the assessment of governance efficiency of farms is made directly without specifying highly diverse governing modes for every individual transaction and type (class) of transactions in every particular farm, nor the absolute level of transaction costs and farm's adaptation potential.

Next, the qualitative assessments of the managers for the governance of a major class of transactions were transformed into quantitative values, as the Insignificant was assessed with 1, the Normal with 0.5, and the Significant with 0. The latter quantification gives a precise idea about efficiency and its levels distinguishes clearly the inefficient (0) from the good (0.5) and highly (1) efficient governance.

For each of the agricultural holdings, an Integral Governance Efficiency Index is calculated by multiplying the quantitative value for each type of transaction. The Index of Governance Efficiency of farms as a whole and farms of different types (specialization, location, etc.) were obtained as an arithmetic average from the individual indices of the constituent holdings. In order to determine the level of Farm Governance (and the overall) Efficiency, the following benchmarks were used: Low – 0 (one or more major classes of transactions are governed inefficiently), Good – bigger than 0 to 0.094 (less than a half of all major class of farm transactions are with Insignificant problems), and High - 0.095 to 1 (more than a half of all major class of farm transactions are with Insignificant problems).

For assessing the Production Efficiency of individual holdings traditional indicators for Labour Productivity and Profitability are used as levels close to the average for the sector are classified as Good, while these significantly above or below the average as High and Low accordingly.

The "Subjectivity" of farm managers' first-hand assessments incorporated in the suggested novel approach is not a big issue since: there is no other data available or source more reliable; there is a big number of surveyed farms which give quite a precise aggregate picture for the performance of farms as a whole and farms with different type and location. What is more, for the evaluation of real-life efficiency the subjective assessments of farm managers

are useful since most of the factors of transaction costs, governance choice, production output, etc. depend on the personal characteristics of the managers such as stills, knowledge, experiences, perception, preferences, etc. (there are good managers, and there are bad managers). Besides, it is important not to "measure" precisely the level of transaction costs but to determine the level of efficiency, identify critical factors compromising it, and suggest practical tools for assisting farm management and public policies for improving the sustainability of farms of different type and location.

3. Levels of governance efficiency of Bulgarian farms

This study has found that the Governance Efficiency of Bulgarian farms is at a Good level (Figure 2). Nevertheless, the Integral Index of Governance Efficiency of the sector is relatively low (0.017). The latter is a consequence of the fact that only 32% of the Bulgarian farms are with a Good level of governance efficiency, and merely 5% with a High one (Figure 3). Just above 60% of all the farms in the country are with unsatisfactory (Low) level of governance efficiency. Therefore, a significant part of the agricultural holdings in the country will likely disappear shortly due to the low efficiency and adaptability.

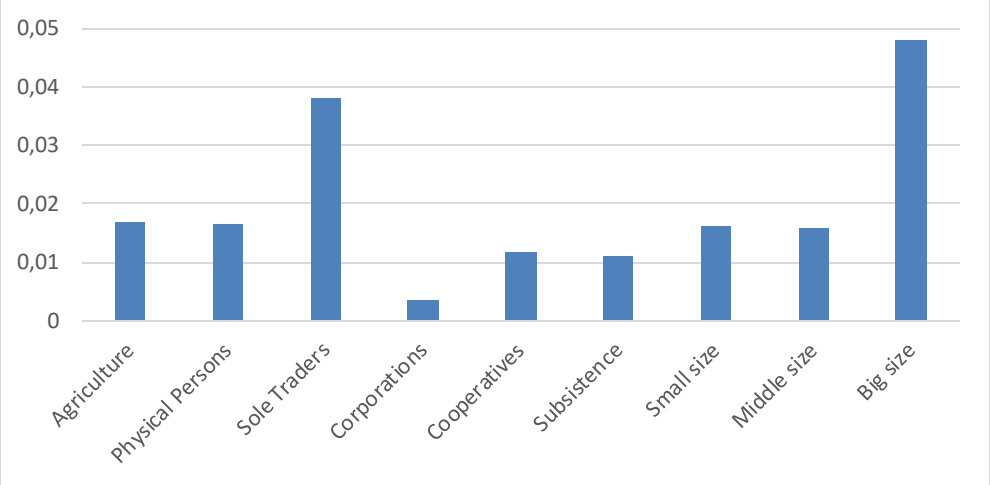

Figure 2. *Level of Governance Efficiency of Farms of Different Juridical Types and Sizes in Bulgaria*

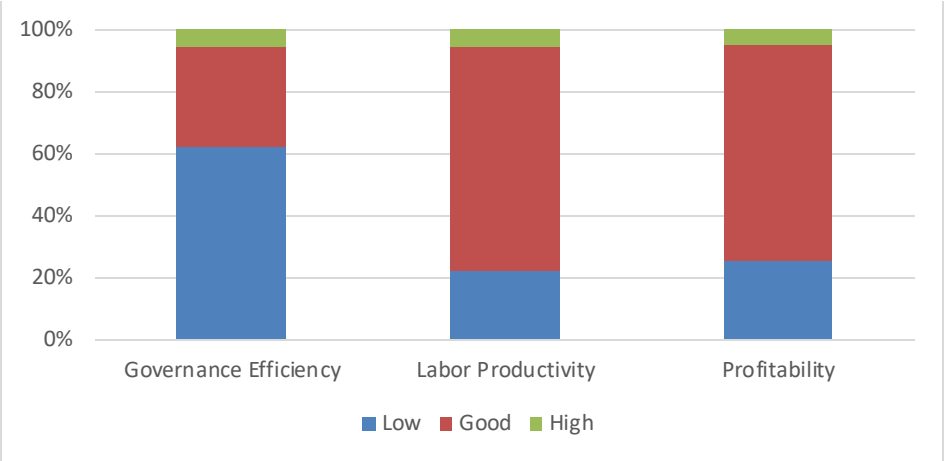

Figure 3. *Share of Farms with Different Levels of Governance Efficiency, Labor Productivity and Profitability in Bulgaria*

The discrepancy in the precision of the applied framework with the traditional "production function" approach and indicators for farm efficiency, like Labour Productivity and Profitability, is quite big (Figure 3). The latter assessment is very misleading and shows a substantial proportion of farms with superior (Good or High) levels of efficiency – 78% and 75% accordingly. Therefore, it does not give a good insight to decision-makers about the real efficiency and sustainability of farms (particularly for the those with good and low levels) and has to be used cautiously in the economic analysis.

The major factors for the inferior overall governance efficiency of Bulgarian farms are the Low levels of efficiency in the Supply of Necessary Labour Force, the Supply of Necessary Innovations and Know-how, and the Supply of Necessary Funding, prevailing for 30%, 27%, and 21% of all agricultural holdings in the country (Figure 4). At the same time, the factors mostly contributing to increasing the overall efficiency level are the Good or High efficiency in the organization of the Supply of Necessary Services, Land and Natural Resources, and Materials, Equipment, and Biological Resources.

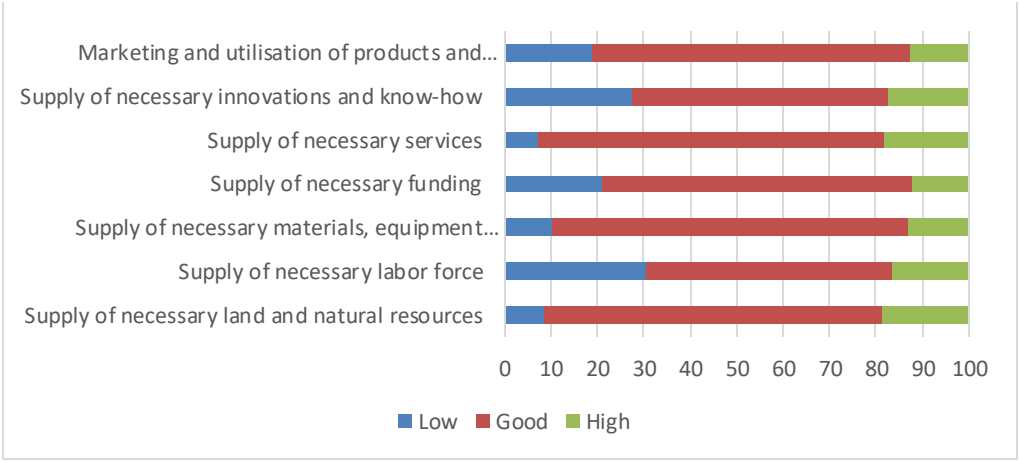

Figure 4. *Share of Bulgarian Farms with Different Levels of Governance Efficiency in Organisation of Major Transactions and Activity (Percent)*

There is a great variation in the level of governance efficiency among the farms with different juridical types and operational sizes (Figure 2). With the highest governance efficiency are the Sole Traders and the enterprises with a large size for the sector. At the same time, the level of governance efficiency of the corporative and cooperative farms and "semi-market" (predominately subsistence) holdings is lower than the sector's average.

The share of all commercial farms with a low level of governance efficiency is substantial with the exception of the Cooperatives among which all are with good governance efficiency (Figure 5). Subsistence farms with low and good governance efficiency levels are equally distributed. The biggest number of farms with a high governance efficiency is among Sole Traders and large-scale operators. These figures give new insights on the extent and directions of likely prospects for the process of further restructuring of Bulgarian farms and transfer of management of resources and activities from farms with low efficiency (mostly small size and unregistered holdings) to more efficient enterprises (mostly large-size business farms and cooperatives).

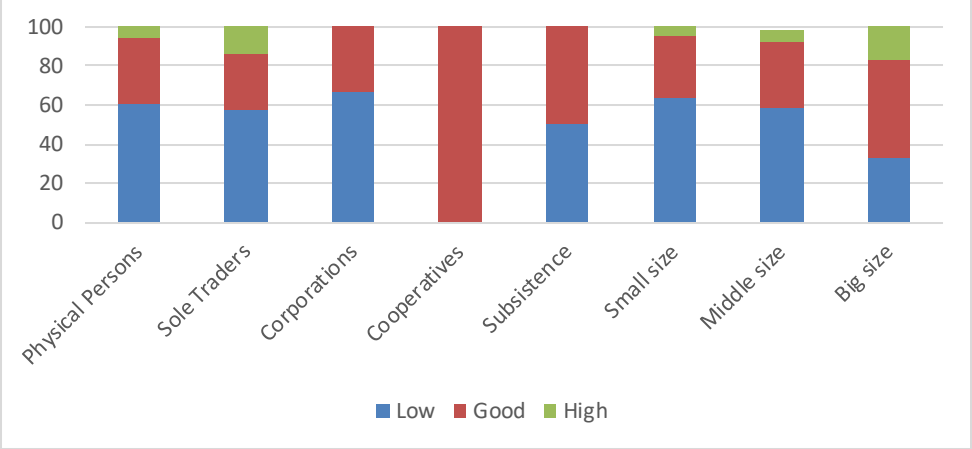

Figure 5. *Share of Farms of Different Juridical Types and Sizes with Different Levels of Governance Efficiency in Bulgaria*

This analysis let also identify specific factors responsible for the low governance efficiency of different type of Bulgarian farms (Figure 6). The significant difficulties (the high transaction costs) in the supply of needed labor, finance and innovation, and in the marketing of output, is critical for the maintaining efficiency of a significant number of Physical Persons. For the good proportion of the Sole Traders, the most important factors restricting efficiency are the high transaction costs for the supply of needed land and natural resources, funding, and innovations and know-how. For the majority of corporations, the critical factors are an inefficiency in the supply of needed labor force, materials, equipment, and biological resources, and financing. Similarly, low efficiency in the supply of necessary labor is most important for the small and middle-size holdings, the serious difficulties in the supply of need finance for subsistence and small scale holdings, an insufficient supply of innovations and know-how for the good

number of smaller-scale operators, and the marketing difficulties for a great segment of all size farms. All these figures give some good insights on the critical factors restricting efficiency and development (enlargement, modernization) of different types of Bulgarian farms and are useful for designing management strategies and policies support for different types of farming enterprises.

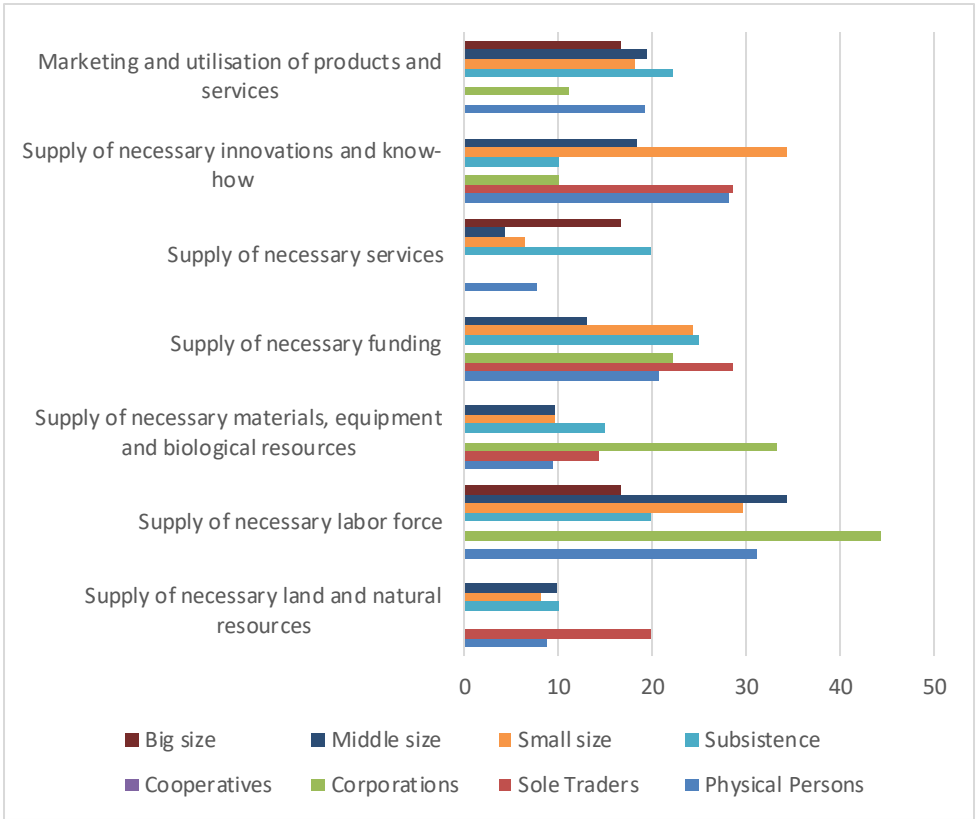

Figure 6. *Share of Bulgarian Farms of Different Juridical Types and Sizes with Significant Problems in Efficient Organisation of Major Transactions and Activity (Percent)*

4. Factors of governance efficiency of Bulgarian farms

The study of governance efficiency of Bulgarian farms let identify the critical personal, market, institutional, technological, environmental, etc. factors responsible for its state and evolution.

For the greatest majority of the managers of Bulgarian farms with a good governance efficiency, there are a big variety of market, internal, external, institutional, and personal factors contributing to the increasing their competitiveness (Figure 7). These kinds of enterprises are with good efficiency and adaptability and use (look for) all internal and external opportunities for ameliorating their governance (and overall) efficiency to the highest level.

At the same time, for a few farms with a high governance efficiency, there are significant internal and external factors for increasing their competitiveness. That is because they have already adapted to the most

efficient state exploring fully transacting and production possibilities, and there are no additional factors (potential) for increasing the status quo.

On the other hand, for the considerable farms with a low governance efficiency the most critical factors for improving their inferior competitiveness levels are Available information, Access to knowledge, advice, and counseling, Direct state subsidies received, and Participation in state support programs, while their insufficient adaptability to Market conditions (supply and demand, prices, competition) is important for the low governance efficiency level.

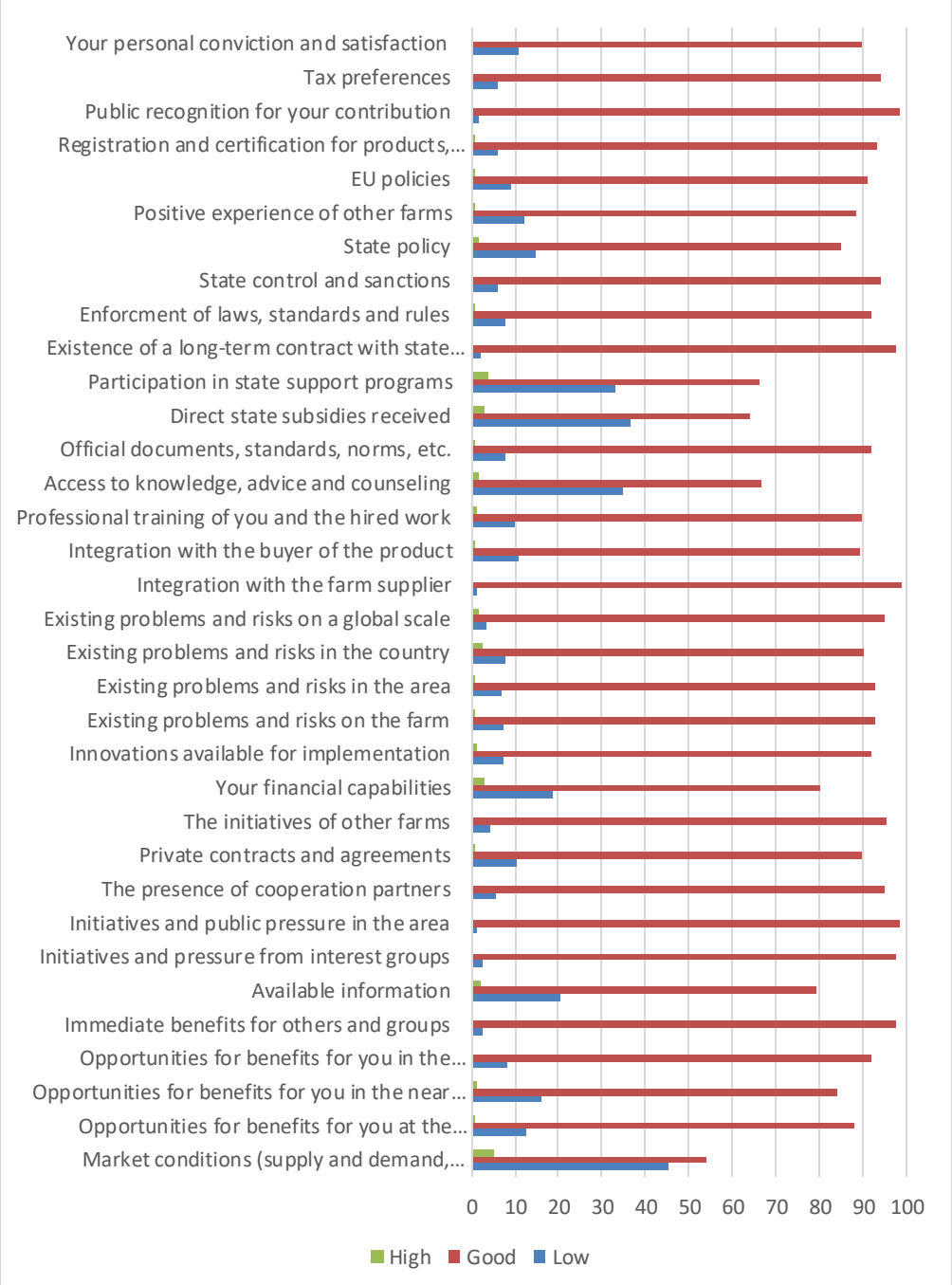

Figure 7. *Factors contributing the most to increasing the competitiveness of Bulgarian farms (percent)*

Similarly, merely a few managers of farms with a high governance efficiency indicate there are policy instruments that could further increase their efficiency level (Figure 8). That is a result of the fact that all adaptation to policies support and regulation has been effectively made and maximum efficiency level successfully reached.

Simultaneously, for a great portion of farms with a good governance efficiency, all policies instruments are important, since they are in the process of adaptation and full exploration of institutional (support, regulatory, etc.) possibilities for increasing efficacy.

On the other hand, according to the good portion of managers of farms with a low governance efficiency only policy factors able to improve their inferior competitiveness levels are Direct subsidies per unit of land area (Area based payments), National payments (tops ups) for products, animals, etc., Professional training and advice, Support for Modernization of agricultural holdings, and Support for small and medium farms.

All these critical factors have to be taken into account in the process of modernization of public support policies for increasing the efficiency, sustainability, and competitiveness of Bulgarian farms.

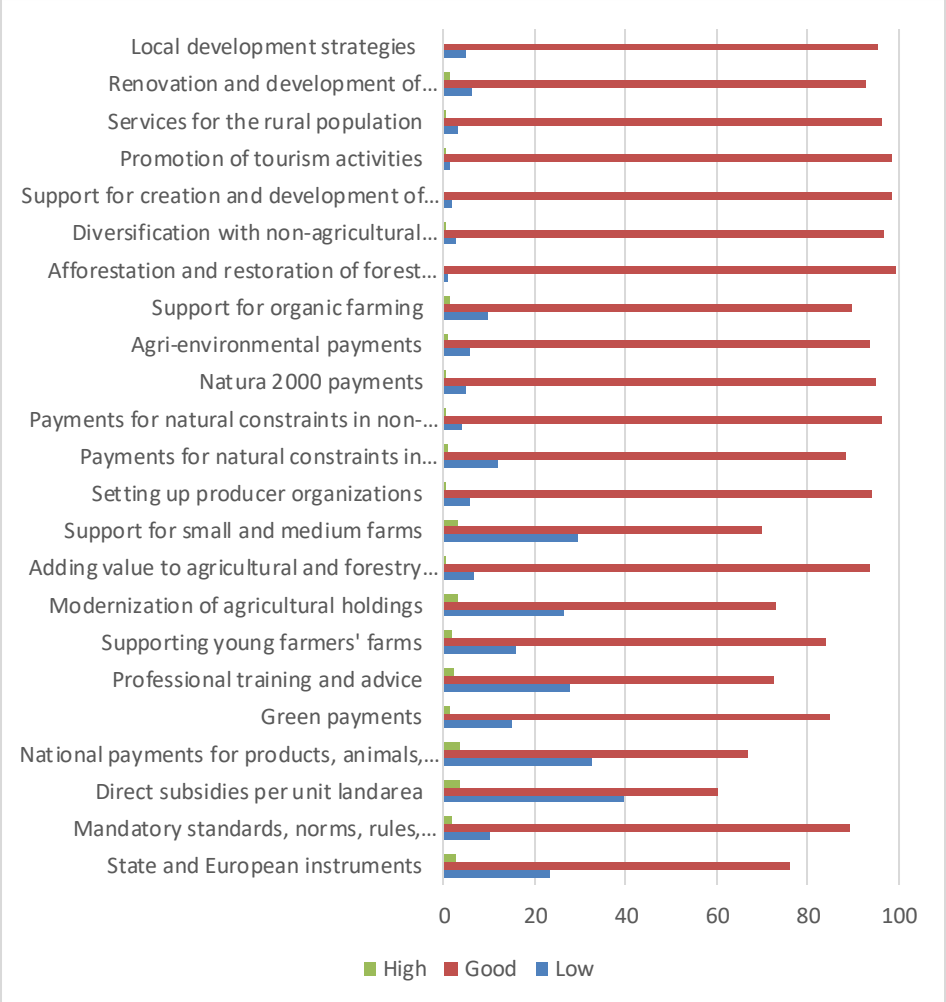

Figure 8. *Policy instruments most increase the competitiveness of Bulgarian farms (percent)*

Not surprisingly only a few farms with a high level of governance efficiency are planning some size, organizational, technological, etc. changes in the near future (Figure 9). That is a consequence of the fact that these types of enterprises have reached a high-efficiency level optimizing production and transaction factors, and need no further adaptation to improve their governance and overall efficiency.

On the other hand, most of the farms with a good level of governance efficiency are planning certain size, organizational, technological, etc. adjustments and modernization in the near future. The efficiency and adaptation capability of that group of farms is good but still, there is some room (potential) for increasing efficiency of production and/or transaction factors.

In order to reach the high efficiency (equilibrium) state, the farm managers are designing certain appropriate for their specific conditions changes in operational size, products structures, technologies, governance of relations with other agents, etc.

Finally, only a few farms with a low level of governance efficiency are planning some radical changes in organizational, production, technological, etc. structure due to inferior efficiency and adaptability. Nevertheless, almost one-third of farm managers are planning to expand farm size in the near future trying to explore transacting and technological opportunities and improving their governance (and overall) efficiency.

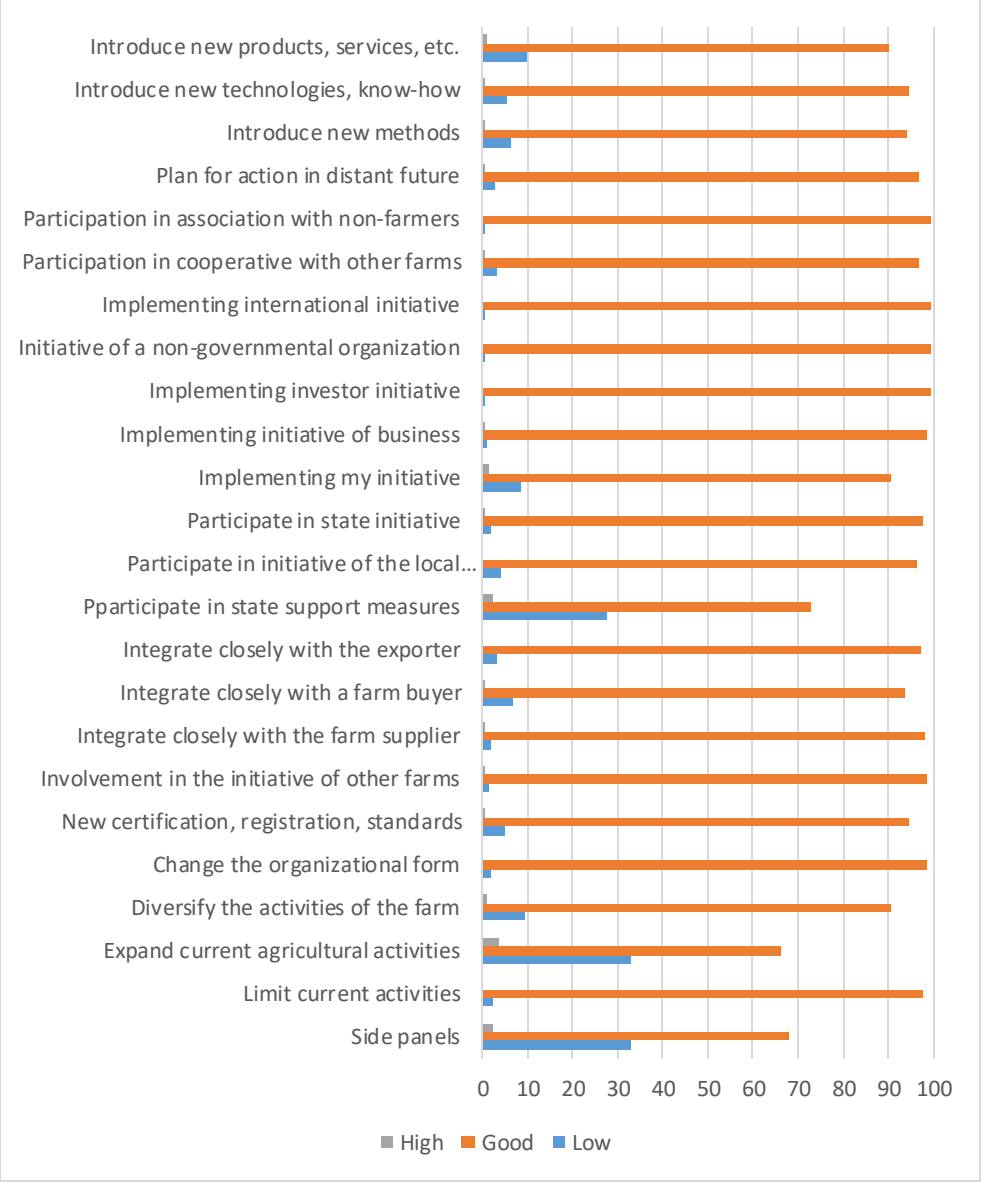

Figure 9. *Intentions of farm managers related to holdings development in the near future (percent)*

As far as the nature of the impact on farm efficiency and competitiveness from the "introduction of the innovative business model of management" merely 22% of Bulgarian farms expect a significant effect (Figure 10). What is more, almost 23% of all farm managers are not able to assess the likely impact of their holding from such organizational innovation.

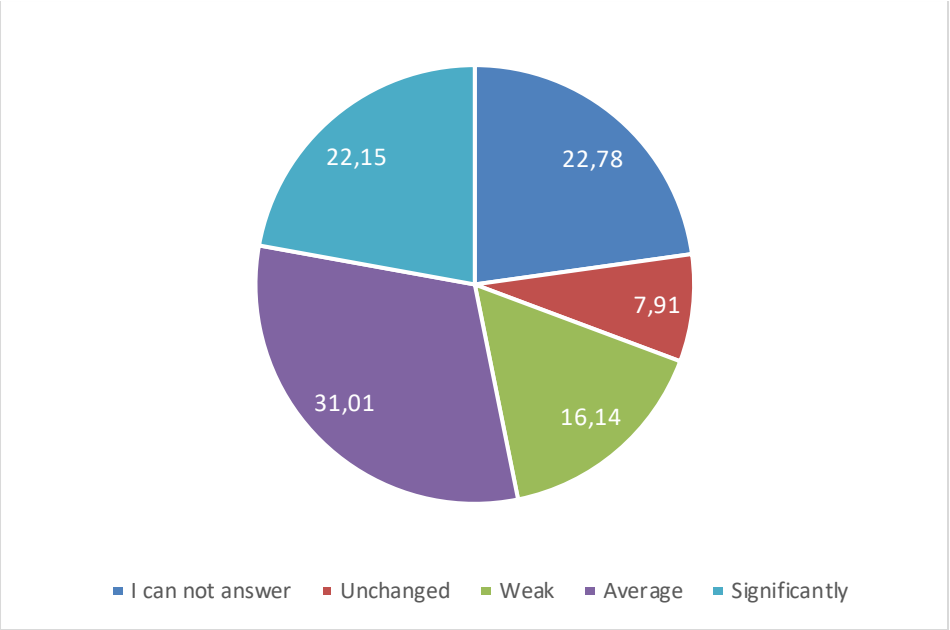

Figure 10. *How will the farm competitiveness increase, when innovative business model of management is introduced? (percent)*

There is considerable differentiation in the perception of the farmers about the opportunities from the introduction of innovative models of management depending on the governance efficiency of their farms. Among farms with a good governance efficiency, 84.5% believe that introducing an innovative business model in the management will increase competitiveness Significantly. It demonstrates that farms with good governance efficiency and adaptability see a great potential to increase competitiveness and are capable to explore it.

At the same time, among farms with low and high governance efficiency, the share of farms foreseeing a "significant" improvement in competitiveness associated with the introduction of an innovative management model is relatedly small – 14.8% and 1.6% accordingly. For the former group, the majority of farmers do not know or see the only limited possibility of improving the governance (and overall) efficiency, because of the low farms' capability for effective adaptation to higher efficiency levels. For the latter group, all feasible managerial innovations that could increase efficiency have been already successfully introduced, all possible adaptation to explore economies on production and transaction costs made, and there is no available innovation in management that contributes to enhance (the high) efficiency.

5. Evolution of the governance efficiency of Bulgarian farms

There is no systemic and representative data for comparing the evolution of governance efficiency of Bulgarian farms. However, there are comparable 2016 data for 190 "typical" farms collected to assess the Governance

sustainability of the country's agricultural holdings (Bachev, 2018). For obvious reasons, the sample of surveyed farms is smaller and not identical, and a certain (good) number of the interviewed 2016 holdings most likely were not existing in 2020 (e.g. the low efficient and sustainable ones). Nevertheless, the applied approach for the assessment of farm efficiency is the same, and the estimates of its levels give some insights into the evolution of governance efficiency during that period.

In 2016 the governance efficiency of Bulgarian farms was at a good level. However, the Index of Farm Efficiency was much lower than the 2020 level – namely 0.006 against the late one of 0.017. Thus there has been progressive evolution (an increase) in the governance efficiency of Bulgarian farms, as a result of effective adaptation and restructuring of holdings. That finding is in line with the statistical data about the evolution of agricultural holdings in the country during the same period (MAFF, 2021).

The share of low efficient farms in 2016 was much smaller than in 2020, the portion of farms with good efficiency was significantly higher, while those with superior efficiency were approximately similar (Figure 11). During the analyzed period the share of farms with low efficiency rose almost 38%, while those with good and high efficiency declined by 37% and 8% accordingly. Consequently, the share of efficient farms (with good and high governance efficiency) was reduced by almost two-thirds. Therefore, there is a deterioration of the governance efficiency of a large number of Bulgarian farms due to the high transaction and production deficiency and low adaptability to rapidly changing market, institutional, technological and natural environment.

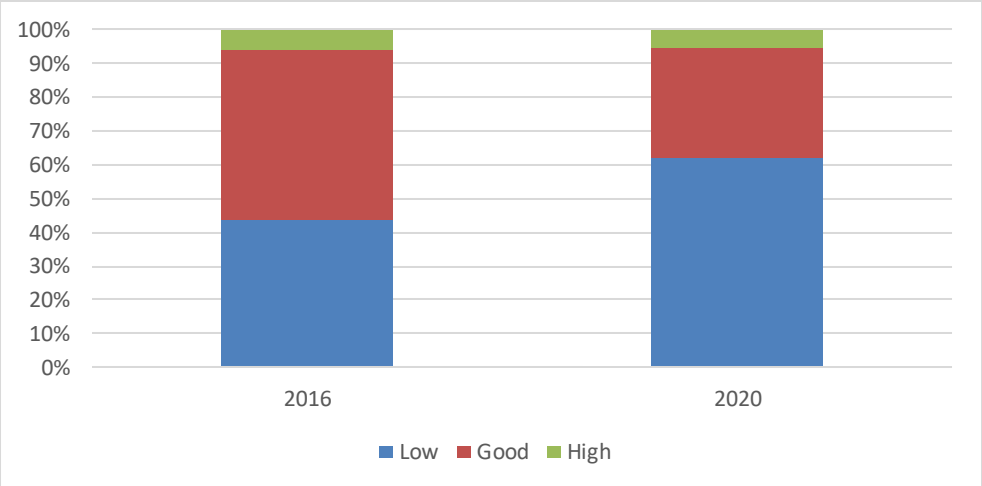

Figure 11. *Share of Farms with Different Levels of Governance Efficiency in Bulgaria in 2016 and 2020 (percent)*

Presented attempt to assess the governance efficiency of Bulgarian farms confirms some "well-known" things about the economic efficiency of the country's farms as well as shed new light on the most critical factors of "real" efficiency and sustainability of analyzed individual farms, and farms of different type and locations. Particularly, it highlighted important prospects

related to the speed, factors, and direction of contemporary restructuring of farming organizations in the country. This first-in-kind "quantitative" assessment of the governance efficiency also has confirmed the results of previous qualitative analyses on the governance efficiency of the country's agricultural holdings in general and different types (Bachev, 2010b; Bachev, 2018; Bashev, 2012). Lastly, this assessment has proved that the specific efficiency of an individual farm is determined by a spectrum of specific (personal, production, organizational, management, market, ecological, etc.) factors resulting in big variation in efficiency levels in each particular group (juridical type, size, specialization, etc.), all of which have to be carefully identified and analyzed. Therefore, "theoretical" approval or rejection of one or another mode or form of governance or farming organization is not justified.

This approach is just an attempt to assess "fully" the economic efficiency of Bulgarian farms and has to be further tested and improved. In addition, the comprehensive evaluation of the overall efficiency of farms of a different type is to includes the social and environmental dimensions.

6. Conclusion

This study has proved that the proper assessment of the economic efficiency of the farm requires a new approach and analyzing it as one of the alternative governance structures for agrarian transactions. Moreover, it has demonstrated that it is possible to make a comprehensive quantitative assessment of the level of governance efficiency of individual farms and farms of a different types. Furthermore, the suggested approach let not only "measure" the governance efficiency, but detect the critical micro-economic factors compromising it in different types of farms. Consequently, more realistic prospects of (juridical, size, specialization, geographical, etc.) restructuring and further development of Bulgarian farms have been presented. In addition, this approach could assist significantly improvement of farms' management strategies and public support interventions and has to supplement traditional analysis of production efficiency of farms of a different type.

The study has found out the governance, and thus the overall, efficiency of Bulgarian farms is at a good level with a significant variation in the efficiency of farms of different juridical types, sizes, specializations, geographical and ecological locations. The main factors leading to inferior governance efficiency of Bulgarian farms are quite specific but mostly associated with the low levels of efficiency for the organization of supply of necessary labor, innovations and know-how, and funding. Furthermore, a considerable proportion of the Bulgarian farms are with a low level of governance and overall efficiency, and most likely will cease to exist in the near future. The result of that assessment is different from dominating analysis in the area based solely on the "production function" approach and traditional indicators for the productivity of labor, land, and capital.

The presented and experimented "new" approach has to be further refined and incorporated into the assessment process of the real economic efficiency of the farms in general and of a different type. Such assessments, however, require a novel type of farming micro-economic data currently unavailable from traditional statistical and other sources. In the future, quantitative evaluations have to supplement more broadly dominating qualitative assessments in this important area, and use widely in academic studies and farm management practices. Besides, the evaluations of farms governance efficiency have to be made regularly to detect likely changes in the efficiency and longer-term dynamics. Hopefully, similar studies will appear in other countries as well and allow more precise estimates of the comparative economic efficiency of farms on broader international scales.

Having in mind the big academic, policy, and farm management importance, the suggested framework has to be further improved and widely applied in the economic analysis at various levels. Adequacy and representatives of these kinds of assessments could be significantly improved, including internationally, if the "production-oriented" agro-statistical information system in the country and EU, was greatly modernized and included data about modes and factors of farming governance and transaction costs.

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