

1. Introduction

The issues related to understanding, assessing, and improving the economic efficiency of farms and other agrarian organizations have been among the most topical in academic, business, and policy debates in the last decades [1–3]. Consequently, there have been numerous publications on the “right” approaches for defining and evaluating the farm economic efficiency as well as multiple assessments of the efficiency level of farms in a particular country, a specific subsector of agriculture, a particular type of farming organization, a different region, and so on, including comparative studies between countries, industries, regions, farming structures, historical periods of evolution, etc. [4–6].

Despite the fundamental progression of the theory of economic organizations in the last several decades [7–9], the farm continues to be studied only as a “production structure” and its economic efficiency is assessed on the base of the traditional indicators for the productivity of factors of production (land, labor, capital, etc.) [10–12]. At the same time, significant factors, affecting a farm’s efficiency, such as transaction costs and capacity for adaptation to changes in (market, institutional, technological, natural, etc.) environment, are entirely ignored in the economic analysis. Subsequently, many “strange” phenomena, associated with farming development around the globe, cannot be explained by Traditional Economics, 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 have been often associated with the transfer of resources management to “less efficient” (low productive) structures; why there are farms and firms at all, and why there are so many types of farms and agrarian organizations, etc. For instance, in Bulgaria during the period of the country’s EU accession and membership (since 2007), there has been enormous differentiation in the factor’s productivity of individual farms, and holdings of different sizes, juridical types, product specialization, and geographical location [13–15]. Furthermore, there has been considerable restructuring and adjustments of farming structures, associated with the transfer of management into large agro-firms and cooperative farms, and a significant decrease in the number of agricultural holdings in the last two decades (one quarter in 2007 compared to 2003, and 73 % by 2020 comparing to 2007 [16]. “Surprisingly”, no correlation has been found between the latter evolution and the level of “economic efficiency” of the country’s farms.

AN ASSESSMENT OF THE GOVERNANCE EFFICIENCY OF AGRICULTURAL FARMS

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Abstract: Despite the fundamental progression of the theory of economic organizations, Farm continues to be studied as a “production function” and its efficiency is assessed with “factors productivity”. The report incorporates the New Institutional Economics and adequately defines and assesses the economic efficiency of Bulgarian farms. If inputs supply and marketing transactions of a farm are governed effectively (equal or fewer costs compared to another farm/organization), it is considered to be efficient, and vice versa. First in kind quantitative evaluation of governance efficiency of Bulgarian farms is made on the basis of assessments of managers of typical farms. “Nature of the problems in effective organization for major type farm transactions for securing needed factors of production and output realization” is used as an indicator for the comparative transaction costs. The study has found that the governance efficiency of farms is at a Good level but 60 % of all farms are with a Low efficiency and will likely cease to exist in near future. Major factors for inferior governance efficiency of farms are unsatisfactory efficiency in Supply of Necessary Labour, Innovations and Know-how, and Funding. There is a huge variation in governance efficiency of farms with different specializations as holdings in Field crops, Vegetables, Flowers and Mushrooms, and Mix livestock demonstrate the lowest levels. There is a big discrepancy between the new assessment and the dominating traditional approach to farm efficiency. The suggested framework has to be improved and widely applied in economic analysis at various levels, which require the collection of a novel type of micro-data on farms governance and transaction costs.

Keywords: governance, efficiency, farm, transaction costs, assessment, inputs supply, marketing, Bulgaria.

The interdisciplinary New Institutional Economics is a rapidly evolving novel methodology, which allows better understanding and assessing the efficiency of diverse forms of economic organizations in agriculture – farms and other organizations [7, 17, 18]. It studies farms (not only as a production but also) as a governance structure – as a form for the organization (governing) of agrarian transactions and minimization of transaction costs in the specific market, institutional, and natural environment of a particular country, subsector, region, etc. In the last decades, in Bulgaria [19–21] and internationally [3, 8, 9] there have been numerous studies, incorporating this new Transaction Costs framework into the analysis of various governing structures and issues in agriculture: different type of agrarian contacts, forms of farming organizations, modes of public intervention in agriculture, sustainability and competitiveness levels of farms, etc. In the majority of cases, however, the studies of governance efficiency of farms are predominately at a theoretical and conceptual level and mostly focus on past (historical) rather than current and future transacting costs. A major reason for that is the lack of statistical, accountancy, farming,

etc. data on diverse transaction costs in the agrarian sector, and on diverse formal and informal modes of governance, employed by individual farms. Simultaneously, Traditional Economics “adapted” its approach to the new norms (insights) in the economic analysis by keeping old methods for assessing of now “technical”, “production”, “factors”, “resources”, “accountancy” etc. efficiency of farms (and ignoring important transaction costs and adaptation potential of farms).

This report incorporates the achievements of the powerful methodology of the New Institutional Economics and tries to adequately define and assess the economic efficiency of Bulgarian farms at the current stage of development.

The aim of the study was to suggest a practical approach to assess governance efficiency of agricultural farms.

2. Methods

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 [7, 22, 23]. It turns individual transactions into a basic unit of economic analysis, identifies diverse alternative modes for governing transactions and activity (market, contract, internal, hybrid, etc.), and assesses the efficiency of alternative

(discrete) governance structures in a comparative (mainly transaction costs minimizing) way [7, 17, 18]. What is more, Williamson proved that the efficient boundaries (size) of a firm (in our case an agricultural farm) is eventually determined not by the technological (production costs) but by the transaction costs minimizing factors [18]. Therefore, a farm is efficient if it governs all its transactions and activity in the most economical way compared to other feasible organization(s) – equally or more effective way to another farm(s), agrarian organization(s), public, hybrid, etc. modes [7, 23]. Contrary, the farm inefficiency exists if (1) it is oversized and carries costlier compared to another (alternative) organization transactions and activity; or (2) it is undersized and it does not internalize a potential highly efficient for the farm, and more efficient compared to another farm(s) or organization(s), transactions and activity. In addition, if the farm adaptation potential to permanently changing market, institutional, natural, etc. environment is good, its governance efficiency will be high since it will overcome easily (low or no costs) existing and other possible (future) transacting difficulties, moving to the most effective state/size [22, 23]. Alternately, if the adaptability of a farm is low, its governance efficiency will be low since it is not able to reach the equal or more effective state/size of transactions and activity compared to another farm(s) and organization(s).

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 for the analyzed farm mode of 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. 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.).

In Bulgarian, 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 to evaluate (measure) directly the total transaction costs of the farms and other agrarian organizations since that is difficult, too costly, or practically impossible. The latter is a consequence of the high specificity depending on: the skills (ability) of individual farm managers, multiple and interlinked (to the farming or another production and/or transactions activity) character, the unique conditions of farm production and exchange, and the external market, institutional and natural 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 order to overcome highlighted “measurement” problems, in this study, we do not try to assess and compare the absolute levels of transaction costs in the individual farms but the relative costs for the organization of particular types 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 the specific production and exchange conditions of his/her particular holding, including internal needs for the combination of factors of production, type, and amount of required outside exchanges, the severity of problems in the governance of inputs supply and marketing, and the opportunities and restrictions for the farm operation and development from evolving market, institutional, natural, etc. environment.

Therefore, our assessments of the efficiency of Bulgarian farms are based on in-depth interviews and original first-hand microdata (and assessments) from the managers of agricultural holdings. Initially, the major type of farm transactions in the country has been identified through literature review, several case studies of dominated practices, and widespread use of expert assessments. Next, a large scale survey has been carried out asking individual farm managers about the “Nature of the problems in the effective organization” for every major type of farm transaction for securing needed factors of production and realization of output, including “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 evaluated the extent of the problems for the effective organization of each type of transactions in their 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 ceases 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.

A survey of farm managers was carried out with the assistance of the National Agricultural Advisory Service and the major producers’ organizations in the fall of 2020 and involved 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. The structure of the surveyed farms approximately corresponds to the real structure of the farms in Bulgaria.

The qualitative assessments of the managers for the governance of major types of transactions were transformed into quantitative values, as the Insignificant was assessed with 1, the Normal with 0.5, and the Significant with 0. For each of the agricultural holdings, an Integral Governance Efficiency Index is calculated by multiplying the quantitative value for each type

of transactions. The Index of Governance Efficiency of farms as a whole and with different types (specialization, location, etc.) was 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 types of transactions are governed inefficiently), Good – bigger than 0 to 0.094 (less than a half of all major type of farm transactions are with Insignificant problems), and High – 0.095 to 1 (more than a half of all major type of farm transactions are with Insignificant problems).

For assessing the Farm 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.

3. Results

Our study has found that the Governance Efficiency of Bulgarian farms is at a Good level (Fig. 1). 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 (Fig. 2). 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.

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 (Fig. 3). 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.

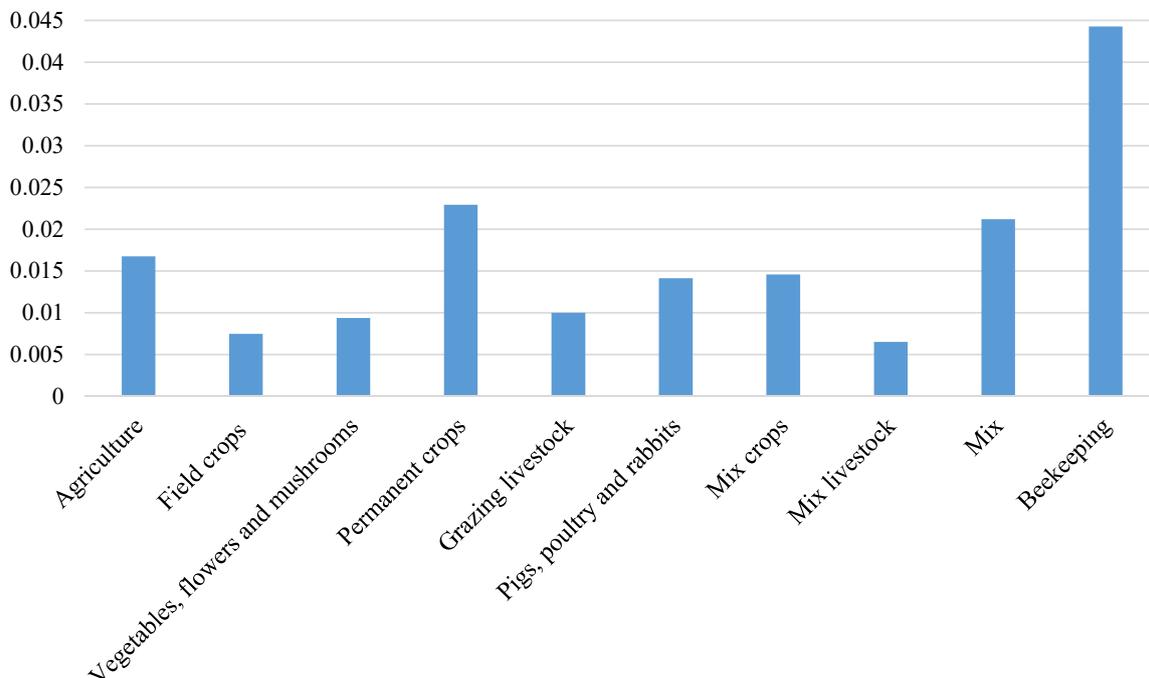


Fig. 1. Level of Governance Efficiency of Bulgarian Farms. Source author calculation

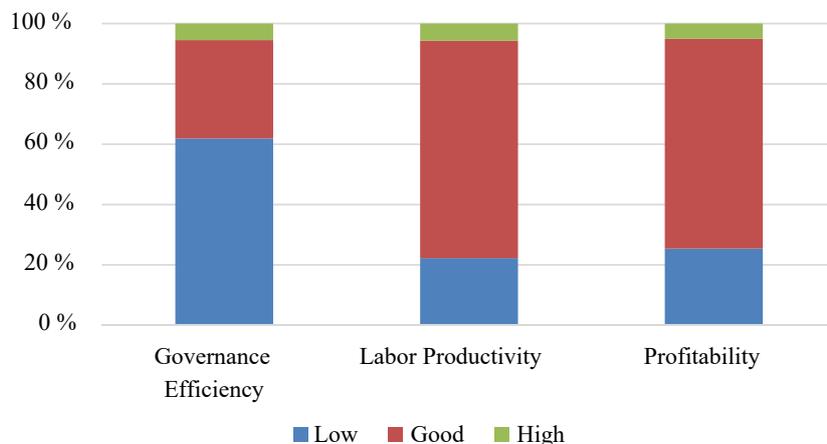


Fig. 2. Share of Farms with Different Levels of Governance Efficiency in Bulgaria. Source author calculation

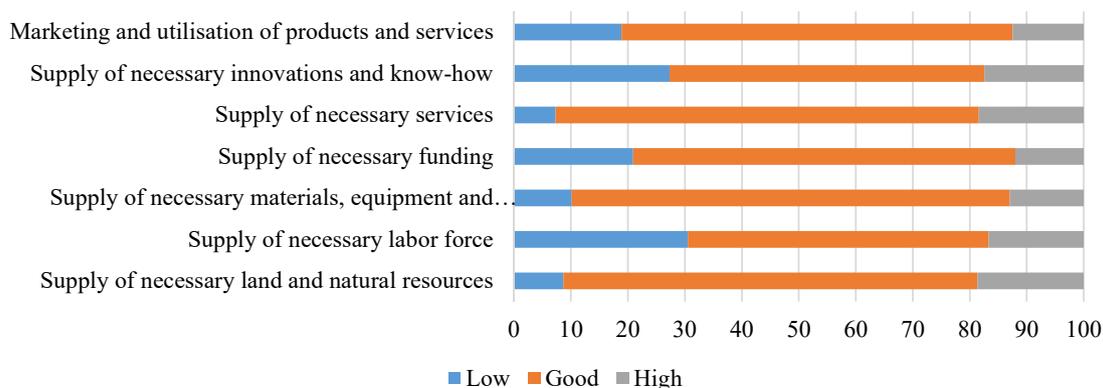


Fig. 3. Share of Bulgarian Farms with Different Levels of Governance Efficiency in Organisation of Major Transactions and Activity (Percent). Source author calculation

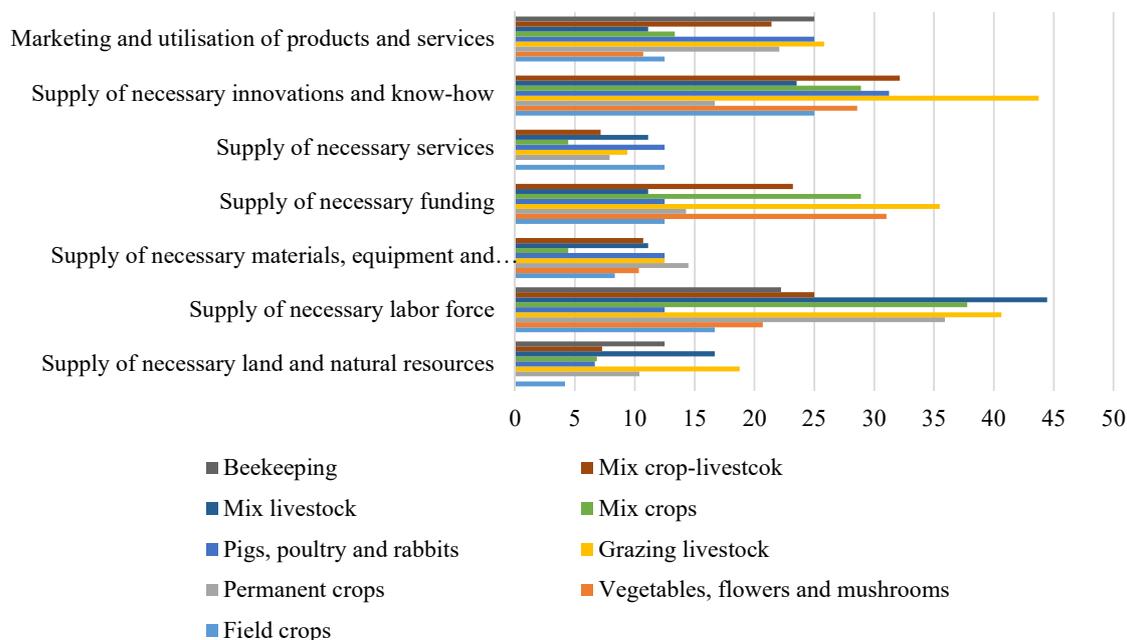


Fig. 4. Share of Bulgarian Farms with Different Specialisation with Significant Problems in Efficient Organisation of Major Transactions and Activity (Percent). Source author calculation

There is a huge variation in the levels of governance efficiency of the farms with different product specializations (Fig. 1). The highest governance efficiency is demonstrated by the farms, specializing in Beekeeping, Permanent Crops, and Mix Crop-Live-

stock, which is above the sector's average. In addition, holdings, specializing in Pigs, Poultry, and Rabbits, and Mix Crops, are with governance efficiency close to the average for agriculture. Lastly, farms in the Field crops, Vegetables, Flowers, and Mushrooms, and

Mix Livestock are with the lowest level of governance efficiency, contributing most to the inferior level of the sector's efficiency.

There is a huge variation in governance efficiency for the different types of Inputs Supply and Marketing transactions of Bulgarian farms as a significant portion of all holdings in various groups of specializations are with a Low level of efficiency (Fig. 4).

4. Discussion

This first attempt to assess the governance efficiency of Bulgarian farms gives a new insight into the overall efficiency of the country's farms. The discrepancy between the traditional "production function" approach and indicators for farm efficiency, like Labour Productivity and Profitability, is quite big (Fig. 2). The latter assessments are very misleading and show substantial portions of farms with superior (Good or High) levels of efficiency – 78 % and 75 % accordingly. Therefore, the suggested "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. "Subjectivity" of farm managers' assessments is not an issue since there is no other data available or source more reliable, and the big number of surveyed farms gives quite a precise picture of the real situation in the country and the main agricultural subsectors.

Furthermore, this first-in-kind quantitative assessment of the governance efficiency of Bulgarian farms confirms the results of previous qualitative analyses on the governance efficiency of the country's agricultural holdings in general and different types [19, 22, 23]. 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 evaluation of farms governance efficiency has to be made regularly to detect likely changes 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.

5. Conclusions

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 type. Such assessments however require a novel type of farming micro-economic data currently unavailable from the traditional statistical and other sources.

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 index of farms with different specializations and being particularly low for holdings in Field crops, Vegetables, Flowers, and Mushrooms, and Mix Livestock. The main factors, leading to inferior governance efficiency, are the low levels of efficiency for the organization of supply of necessary labor, innovations, and know-how, and funding in the country's farms. Furthermore, a considerable portion 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 the dominating analysis in the area based solely on the "production function" approach and traditional indicators for the productivity of labor, land, and capital.

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 representativeness of these kinds of assessments could be significantly improved, including internationally, if the "production-oriented" agro-statistical information system in the EU was greatly modernized.

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