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Special Issue: Growth of agroholdings and mega-farms in transition and emerging market economies: institutional and organizational aspects

Editorial

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Abstract

Since the research agenda on agroholdings and mega-farms was elaborated in the 2017 special issue of IFAMA, much has been learned about structure, performance and management of these farming systems. Despite doubts about the sustainability of these farming systems, they have evolved and even flourished under a wide variety of governance and geographical conditions. It remains to be seen if these systems will be successful in the long run, but continued research is warranted to understand their evolution, functional forms and impacts. This special issue includes four papers examining acquisition, growth and restructuring processes under differing conditions in Brazil, Russia, and Ukraine to gain a deeper and broader understanding of these management forms. A second major focus of this special issue is in the socio-political sphere with three papers to document and better understand the corporate social responsibility of such firms in Argentina, Kazakhstan, Russia and Ukraine. The new knowledge and understanding gained from these papers leads to a reformulation of the research agenda on the development of agroholdings and mega-farms in transition and emerging market economies.

Keywords: agroholdings, mega-farms, management systems, CSR

JEL code: Q13, Q14, Q16

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1. Introduction

This special issue is motivated by continued research that has been going on for several years, following up on the research agenda on the development of agroholdings and mega-farms outlined in the 2017 publication in this journal (Hermans *et al.*, 2017). One of the current research initiatives dedicated to this topic involves collaborating scientists from Leibniz Institute of Agricultural Development in Transition Economies (IAMO) and 12 other institutes and universities under the framework of the LaScala project.¹ The contents of this volume include some of the main research findings, conclusions and recommendations arising from this initiative and lay the groundwork for future research on the topic of large-scale agriculture. The work was supported by project funding from Leibniz Association in addition to contributed time and resources from each institution. The large-scale farming scene is no longer a novelty or an oddity but has become a significant force, particularly in transition and emerging countries which have the agronomic and financial systems that support the growth and sustainability of the large farms.

The 2017 special issue in IFAMR was created by a network of scholars to establish a state-of-the-art perspective of research and suggest a research agenda on the development of agroholdings and mega-farms in a global context. They dealt with the factors that contributed to the growth of agroholdings in different countries, despite the fact that economies of scale in production are realized at sizes well below most of these mega-farms. A second issue in the first collection was how horizontal and vertical processes are organized in these agroholdings. The third focus area investigated the corporate governance and efficiency of these enterprises and how management strategies could overcome the challenges of managing such large and complex structures.

The present issue reports work that has been conducted on the research agenda proposed in the 2017 special issue (Hermans *et al.*, 2017). First, we will discuss the context for this research, including the key research questions, then introduce the papers in this special issue, and finally elaborate an updated research agenda suggested by these research results.

2. The context for this research

It seems clear that not all countries or economic systems provide the conditions for agroholdings and mega-farms to flourish, but it is notable that this form of organizing production and marketing has developed under a wide variety of governance systems, policy regimes, geographical features and agronomic conditions around the world (Kuns and Visser, 2016). In this volume, for example, we include papers from Argentina, Brazil, Kazakhstan, Russia and Ukraine where such farms have evolved and operate under very different policy regimes, though Russia and Kazakhstan now have many common policies under the Eurasian Economic Union agreement while Kazakhstan, Russia and Ukraine have a common history during Soviet times and the related experience with collectivized farming.

It may suggest that national governance systems and policies are neither the main driving force nor the main stimulus for these farming systems. However, at least in Russia and Ukraine, it seems clear that the rapid rise of these mega-farms in the post-Soviet era was facilitated by the nature of transition processes, the path dependencies and uncertainties that followed the collapse of the USSR (Gagalyuk, 2017; Lapa *et al.*, 2015; Visser *et al.*, 2012). In the case of Brazil, case studies have shown that the rise of large corporate farms has emerged from production technology advances, the search for scale economies and overcoming pervasive agency problems (Chaddad and Valentinov, 2017). The Argentina story of farm size expansion was also somewhat different in that it was mainly via horizontal and vertical coordination rather than via acquisition

¹ The International Competence Center 'Large Scale Agriculture in Developed and Transition Economies' (LaScala) is an international network of researchers led by IAMO that investigate the organizational and ethical aspects of large-scale agriculture as well as institutional frameworks that enable persistence of large agricultural enterprises. The project aims especially to fill existing research gaps in understanding the effects of large scale agricultural businesses on the economic and social performance of the sector, welfare and distributional justice in rural areas, competition in factor and output markets. For more information about the project, please visit: <https://www.largescaleagriculture.com/home/>

(Senesi *et al.*, 2017). It remains true that mega-farms have emerged under a variety of governance and policy regimes and evolved in different ways, and that suggests a need for more understanding of their potential for durability and even expansion in the longer run. One common institution that most or all mega-farms rely upon to varying degrees is the international financial market, and all are beneficiaries of and perhaps mainly driven by the wide range of financial transaction technologies, production technologies and marketing strategies that modern farming systems require.

The long run success and sustainability of these farming systems remains to be determined, but in the focus countries covered here, they have been a major factor in expanding production and international competitiveness over the last two decades. The share of grain exports from Russia and Ukraine alone has grown from almost nil to 25% over the last twenty years during a period when world grain exports have nearly doubled. Adding Kazakhstan, Brazil and Argentina brings the estimated 2019/20 share to 50% of world grain exports compared to 17% just 20 years earlier (USDA, 2019). Of course, there are other contributing factors to this export growth, especially the decline of livestock production and domestic feed use in Russia and Ukraine, but the early demise of the sector has been offset in the last decade by remarkable gains in production and productivity. As an example, the growing importance of the agrohholdings in Ukraine and Russia in the last 20 years can be seen in the growth in the shares of farmland use from 0 to 17% for Ukraine (UCAB, 2019) and 1.7 to 13.5% for Russia (Ayushiev and Velikanov, 2003; BEFL, 2019).

While the macroeconomic consequences of productivity growth in the agrohholdings and mega-farms are rather well known, less is known about their internal behaviors and management systems, their implications for sustainability and interactions with the environment and society in their home countries and communities. Thus, we focus on a better understanding of the factors that have affected their performance and how this may impact their sustainability as production systems for the future. For example, is this a temporary aberration in terms of farm structure and organization or is it a form of leap-frogging to management systems that will be sustainable and spread to other market economies in due time? By exploring these issues in several different countries, we aim to learn how the results may be similar or different in differing contexts and what could explain differences if they do emerge.

The increasing dependence of global markets and world food supply on the agrohholdings and mega-farms does raise questions on the sustainability and reliability of these production and marketing systems, especially in Russia and Ukraine, when compared to traditional sources of grain market supplies. For example, what factors drive acquisitions as these firms expand and how does this growth impact performance? When an agrohholding acquires, integrates, and possibly restructures a new production unit, does it improve the performance of that unit or not? Also, do the larger production units of an agrohholding or mega-farm increase or decrease the longer run sustainability of supply or the short run variation of production?

The relationship of the agrohholdings and mega-farms to the quality of rural life and to the preservation of environmental quality, soil health and sustainability of local communities is also a concern to be addressed. The issue of rural life is not substantially different from the traditional concerns about the depopulation of rural areas in the US and Canada as development has gradually increased farm size, reduced farm numbers and depopulated small towns; but the speed of this transformation, especially in Russia and Ukraine, is accelerated by these new operational and management forms. The answer to some of these questions may help us to understand whether these organizational forms are transitory due to the unique socio-economic and policy conditions of transition economies and emerging economies or whether they are a modern wave of industrial farm organization systems that will survive and expand in a variety of socio-economic and political environments.

3. Papers in this special issue

The first three papers focus on acquisition, growth strategies and restructuring, using different methodologies to understand these processes under differing conditions in Ukraine, Russia and Brazil. The fourth paper analyses the effects of corporate governance, strategic management, structural and other institutional issues on financial performance of large farms in Russia. Together, this research enhances our understanding of structure and performance of mega-farms in Brazil, Russia and Ukraine, where large farms have grown in size and number. These address three of the proposed (2017) research agenda items.

Another major item proposed in the 2017 research agenda was the ‘socio-political and ethical aspects of large-scale production’. It is especially relevant due to the power positions of these farms and their pervasive influence on their stakeholders and the communities in which they are located. The research involves both the external and internal dimensions of ethical concerns. These are addressed with three papers on corporate social responsibility (CSR) based on research in Argentina, Kazakhstan, Russia and Ukraine. Each paper stands alone but there will be synergies that we will attempt to discern in the last section of this editorial. In the following, we provide an overview by sharing abstracts of each paper in order of their appearance.

Ostapchuk *et al.* (2021a) draw upon the literature on strategic choice for firm growth to investigate the firm-level determinants of farm acquisitions. The novelty of this research is that it complements knowledge of previously widely discussed external factors of firms’ choice for growth with analyses of internal, firm-level factors. The paper attempts to understand how contingency factors such as farm performance, size, indebtedness and ownership influence the decision of an agroholding to acquire a farm in Ukraine and Northwest Russia.

Ostapchuk *et al.* (2021b) employ statistical matching and state transition matrix approaches to investigate the effects of post-acquisition farm restructuring on farm growth. Building on Penrosian limits to growth and post-acquisition firm performance literature, the paper assesses how post-acquisition changes in farm specialization, production factors (land, labor, capital and variable inputs) and administrative load affect farm size, productivity and profitability. This way the paper reveals which post-acquisition restructuring strategies the acquiring enterprises use and discusses these strategies within a broader context of a transition economy.

Ortiz *et al.* (2021) analyze numerous cases of large farmers that have declared themselves in severe financial distress and filed for Judicial Financial Recovery (JFR) in the past few years. The statistical analysis indicates that these operations have shown financial indices at levels that, in general, did not significantly differ from a sample of other larger farmers’ financials. In sum, there may be inaccurate interpretation of the farmers’ financial condition due to incomplete information, and a component of moral hazard motivating large farmers filing prematurely for JFR in Brazil. The number and magnitude of these cases may generate negative consequences to agricultural credit costs and availability in the future.

Tleubayev *et al.* (2021) draw upon the corporate governance and business groups literatures to analyze the effects of agroholding-affiliation, ownership structure and concentration on financial performance of farms in Russia. One of the novelties of the paper is that this sort of analysis has rarely been conducted in the contexts of agriculture and post-Soviet transition economies. The analysis shows that there is a U-shaped relationship between ownership concentration and farm financial performance while agroholding-affiliation positively affects financial performance of farms. Respective implications for agriculture in transition countries are subsequently developed.

Hajdu *et al.* (2021a) use qualitative thematic analysis and grounded theory to analyze how managers’ social conscience defines the way large farming companies address societal issues. Drawing upon institutional theory and in-depth interviews with agroholding managers from Argentina, this analysis indicates that formal corporate social responsibility (CSR) policies are not a sole mechanism for addressing societal concerns as well as that managers’ CSR motivations are not solely instrumental and profit-oriented.

Hajdu *et al.* (2021b) build on the institutional theory of corporate social responsibility (Campbell, 2007) and conduct analysis of the survey data from Kazakhstan and Russia in order to understand the extent to which the farms' institutional environments, structural and managerial characteristics predetermine farms' engagement in CSR.

Gagalyuk *et al.* (2021) draw upon the organizational legitimacy perspective to delve into factors of CSR reporting of publicly listed Ukrainian agroholdings. The results of four case studies in Ukraine demonstrate that agroholdings tend to voluntarily report on much more CSR activities in local mass media rather than in corporate reports. This points to the prevalence of the license-to-operate and potential for institutionalization of corporate transparency over symbolic public relations (PR) actions and signaling rationale for CSR reporting.

4. Toward a research agenda

In what follows, we provide an overview of some of the open questions that should be included in a future research agenda on the development of agroholdings and mega-farms in transition and emerging market economies.

4.1 Institutional frameworks for the development of agroholdings and mega-farms

The results of the studies presented in this issue implicitly refer to the importance of dynamic capabilities for the development of agroholdings in unstable business environments characterized by market, technological as well as institutional turbulences in the countries under consideration. The up-to-date findings point to the need for reconsideration of the role of some formal institutions, e.g. with regard to corporate governance. Some agroholdings were shown to be able to adhere to best practices regarding professional and gender diversity of corporate boards, which had a positive effect on financial performance. However, corporate transparency remains one of the hottest issues: cases of fraud among owners and top management are not infrequent while corporate reporting may be used for 'greenwashing'. Moreover, agricultural production and markets face very specific risks while at the same time long-run profit margins are low. How can the management and auditors report adequately to shareholders and other stakeholders?

In the view of ongoing digitalization of agriculture, an interesting research objective would be to analyze whether and to what extent modern digital technologies contribute to the development of large agricultural enterprises given existing challenges such as poor public infrastructures, climate change mitigation and adaptation, food security, corporate transparency and labor issues, e.g. outmigration of rural areas and lack of qualified labor.

From the political economy perspective, one important question remains unanswered: Given the level of proliferation and technological superiority of agroholdings, what would be lost or gained if a political agenda in countries such as Kazakhstan, Russia and Ukraine would change and call for a re-orientation toward a broader inclusion of a traditional type of farming in modern agri-food value chains? More cross-country comparisons are needed to comprehensively answer this question because policies and regulations in different countries seem to have a significant effect on the variation in long-term corporate and business strategies of agroholdings.

4.2 Structural heterogeneity and strategic orientation of agroholdings and mega-farms

Previous studies mainly compared agroholdings with other types of farming. However, the studies presented in this special issue show that there is a significant within-group variation among agroholdings even in the context of one country. This variation concerns strategic orientation, e.g. profitability versus expansionist growth, focus on financial versus production management, specialization versus diversification, vertical versus horizontal integration, publicly listed versus privately held agroholdings, etc. What are the drivers behind and outcomes of this variation? In order to answer this question, more in-depth research of the developments

at the level of agroholdings' mother companies is needed. This would help to verify a number of research propositions regarding the effects of improved access to finance, business and corporate strategies, solving agency issues, as well as political involvement of agroholdings' ownership and management.

A common management issue is how to design an organizational architecture that can overcome agency costs arising from conflicts of interest among owners, managers, workers and other stakeholders (Chaddad and Valentinov, 2017). In this context, one of the advantages of looking across countries is to learn about similar or different means of handling these costs.

From a dynamic perspective agroholdings and large farms evolve over time, adapt to changes in their environment and face crises. Within this process, merger and acquisition should not just be seen from a farm growth perspective but may also fulfill important functions from the perspectives of the stakeholders of farms without a future or which may face financial risks or distress. These stakeholders include lenders, employees and market partners. Little empirical and theoretical knowledge exists on the role of a market for merger and acquisition.

4.3 Societal acceptance of agroholdings and mega-farms

Conventional wisdom is that agroholdings are characterized by negative public perceptions. However, as shown by the results of the studies from Argentina, Russia, Ukraine and Kazakhstan, agroholdings are able to relieve some pressure from the society by implementing CSR and various sustainability activities, which are not only instrumentally driven but also are associated with self-identification of agroholdings' management with the rural communities in the agroholdings' operation areas. In this regard, the founders of agroholdings and their main shareholders have very different backgrounds. Accordingly, it would be important to understand whether this background affects the self-identification and how it changes over time. Given potentially joint interests but also potential trade-offs, how to achieve sustainable win-win situations out of these constellations and developments?

Social acceptance is not just an issue regarding the relation of agroholdings and society but also of the agroholdings and other agricultural operations which range from household farms and family farms to commercial farms. These relations may be competitive and driven by economic and political conflicts but also collaborative in terms of joint political rent seeking or joint development of infrastructures and supply chains. What drives these processes and how can win-win solutions be found which incorporate sustainable development?

Furthermore, it seems that public perceptions of agroholdings differ considerably by regions, stakeholders and specific interest groups. More in-depth research into the motivations and perceptions of these groups is needed in order to get an objective picture. Last but not least, papers in this issue have still only slightly addressed the issue of power that agroholdings exert on the factor markets and surrounding institutional environments.

5. Agroholdings in the universe of farm types in Russia, Ukraine and Kazakhstan

There is no official definition of agroholdings as of today, and the statistical agencies, particularly in post-Soviet countries, neither collect nor publish information about these organizations as a separate category. Data on agroholdings comes mainly from the consulting agencies analyzing public registries to identify the farms associated through ownership of the same physical or legal entities² (cf. Uzun *et al.*, in press). The examples of such agencies include First Independent Rating Agency (Epshtein *et al.*, 2013; Matyukha *et al.*, 2015), SPARK Interfax, RUSLANA (Uzun *et al.*, in press) and BEFL (BEFL, 2019) in Russia.

² Another source of information is corporate reporting of publicly listed agroholdings (e.g. Gagalyuk, 2017); however, the share of these enterprises in the total population of agroholdings is small.

Ukrainian Agribusiness Club (UCAB, 2019) and Latifundist Media (Latifundist, 2021) collect information on agroholdings in Ukraine. In addition, researchers rely on their own farm surveys (Hockmann *et al.*, 2009; Petrick, 2017; Rylko and Jolly, 2005; Visser *et al.*, 2019; Walther, 2014) and case studies (Gagalyuk, 2017; Gagalyuk *et al.*, 2018; Matyukha, 2017) conducted in these countries.

In research, a rigid approach to defining agroholdings and agroholding-affiliated farms has evolved over the past years. Agroholdings refer to horizontally and vertically integrated enterprises consisting of a mother company that controls and manages numerous farms and operates dozens or even hundreds of thousands of hectares of farmland (Balman *et al.*, 2013; Hermans *et al.*, 2017; Hockmann *et al.*, 2009; Petrick *et al.*, 2013; Wandel, 2011). A farm is considered agroholding-affiliated if its controlling stake of more than 50% is owned by another owner, i.e. another legal entity or physical person, or if the farm itself (or its principal owner) controls 50% in equity of another farm (Ostapchuk *et al.*, 2021; Uzun *et al.*, in press).

What is the role of agroholdings among other farm types today? Chaddad (2016) and Senesi *et al.* (2017) provided a nice overview of the variety of farm types, including agroholdings, in Brazil and Argentina, respectively. However, until present, it is unclear how agroholdings incorporate in farm structures in countries such as Russia, Ukraine and Kazakhstan. We briefly fill this gap by elaborating on existing farm types in these countries (Table 1). The following main types of agricultural producers are officially recognized in all three countries:

- *Agricultural enterprises (agricultural organizations, business companies).* This type of farming is also referred to as corporate farms in the current special issue. It includes farms of various legal forms, such as joint stock companies, limited liability companies, partnerships as well as a small share of state-owned enterprises. Except state-owned enterprises that serve the needs of government bodies, e.g. army, police or similar, agricultural enterprises are commercial and rely on hired labor. They are the main successors of the assets and farmland of former kolkhozes and sovkhozes. Noteworthy, most agroholding-affiliated farms belong to this type of farming. Overall, there are two types of corporate farms in these countries: agroholding-affiliated and standalone.³
- *Agricultural cooperatives.* An agricultural cooperative is a legal entity that refers to a voluntary association of members (individuals or legal bodies) established for the pursuit of a common agricultural activity. A minimum number of members required by law in Russia is five (Russian Federal Law, 1995) while it is three in Ukraine and Kazakhstan (Republic of Kazakhstan Law, 2015; Ukraine Law, 1997). Each member contributes to the statutory equity capital of the cooperative in the form of cash, land or assets. The ownership of the contributed capital passes to the cooperative, as in a joint-stock company. On exit, members receive their share of investment in cash or in kind, as prescribed by the cooperative charter. The members bear an unlimited liability for the obligations of the cooperative. In general, voting power is ‘one member, one vote’, and is not proportional to the invested capital (Lerman *et al.*, 2007).

In Russia and Ukraine, legislation explicitly distinguishes between production cooperatives and service cooperatives. Production cooperatives are commercial, for-profit entities formed by physical persons (in Russia) or physical persons and legal entities (in Ukraine). They are based on members’ labor although seasonal workers may also be employed. A service cooperative is a non-for-profit legal entity.⁴ It may employ hired labor and its main objective is to provide procurement, marketing, processing and other services to its members. In Russia and Ukraine, membership in service cooperatives is open to both physical persons and legal entities. Kazakh legislation adopts only one form of farm cooperation – an agricultural cooperative – that conducts both production and service activities of members and allows membership of both physical persons and legal entities. Thus, agroholdings as

³ Standalone enterprises are also often synonymously referred to as independent. Note that there are also state-owned agroholdings, e.g. 85 agroholdings in Russia are owned by state (Uzun *et al.*, in press).

⁴ Recent amendments to the law of Ukraine ‘On Agricultural Cooperation’ have replaced production and service cooperatives with for-profit and non-profit cooperatives.

well as other corporate farms may become members of agricultural cooperatives in all these countries with an exception for production cooperatives in Russia.⁵

Like corporate entities, agricultural cooperatives have separation of ownership and control featured by presence of management boards, member meetings and dividend payments. Therefore, the official reporting requirements toward cooperatives regarding their economic activities are similar to those of agricultural enterprises (agricultural organizations, business companies). National statistics agencies usually include the data reported by agricultural cooperatives in the statistics of agricultural enterprises (agricultural organizations, business companies).

- *Farmer enterprises or peasant (farmer) enterprises.* Peasant (farmer) enterprise refers to an incorporated entity created by an individual, a family, or a group of family tied individuals on the basis of jointly owned land and assets. This type of farming is considered to be most similar to Western-type family farms. However, contrary to the Western world where these farms are the backbone of agriculture, peasant (farmer) enterprises did not become the dominant form of business organization in post-Soviet agriculture (Wandel, 2011). Peasant (farmer) enterprises rely mainly on family labor and family owned resources, although they may employ hired labor and lease resources. A peasant (farmer) enterprise must incorporate as a legal person. However, despite incorporation as a legal body, it is officially classified as an individual farm, not a corporate one. Head of a peasant (farmer) enterprise may obtain the status of an individual entrepreneur, which officially represents another farm type in Russia, Ukraine and Kazakhstan but is generally similar to the peasant (farmer) enterprise type.
- *Individual entrepreneurs.* According to national legislations in Russia, Ukraine and Kazakhstan, an individual entrepreneur is a physical person that conducts entrepreneurial activity. Thus, it is not a legal entity but it has to be officially registered as an entrepreneur. Individual entrepreneurs are present not only in agriculture but also in other sectors of economy. Individual entrepreneurs differ from peasant (farmer) enterprises as well as from corporate farms by the tax rates that apply to them. For instance, in Russia and Ukraine, corporate farms and peasant (farmer) enterprises have tax exemptions while individual entrepreneurs are subject to personal income tax (Russian Federation Tax Code, 2021; Ukraine Tax Code, 2021). However, similar to peasant (farmer) enterprises, individual entrepreneurs rely on family labor and are officially classified as individual farms. Therefore, national statistics agencies often include the data reported by them in the statistics of peasant (farmer) enterprises. Articles in this special issue treat peasant (farmer) enterprises and individual entrepreneurs as one group of farms referred to as individual farms.
- *Private household farms (private subsidiary farms, rural households).* This type of farming most often represents a small land plot that belongs to a rural inhabitant (and is often located next to his or her house) or a dacha of an urban inhabitant located usually outside the city. Private household farms evolved in all former Soviet republics during Soviet times as a result of a compromise between state and rural population that aimed to cushion the negative effects of forced collectivization such as the 1932-33 rural famine. The government guaranteed rural inhabitants, i.e. mainly workers of collective farms (kolkhozes), the right to cultivate a small plot of land and keep a certain amount of livestock outside a kolkhoz (Caskie, 2000). This farm type is operated by physical persons, without incorporation or formal registration. It relies on family labor, and its main objective is to satisfy the subsistence needs of a household. Surplus products may be sold outside the household (mainly on open markets or bazaars) and the income from sales of farm products from the household plot is exempt from taxes (except some small fees that may be imposed by local open markets). After the collapse of the Soviet-type system and during the lengthy process of privatization of kolkhozes in the 1990s, private household farms have become one of the major sources of food for population. Even today, their shares in the total production of potatoes, eggs, milk, meat, fruit and vegetables are relatively large and may impact substantially on the local food markets. Therefore, governments in Russia, Ukraine and Kazakhstan officially recognize them as agricultural producers while statistical offices conduct regular surveys of private households regarding their production and consumption volumes.

⁵ A broader focus on agriculture of some other post-socialist countries, such as Eastern Germany, suggests that cooperatives themselves may evolve into agroholding-like structures and even attempt to internationalize by acquiring farms in Eastern Europe (Hermans *et al.*, 2017; Laschewski *et al.*, 2020).

Table 1. Farm structures in Russia, Ukraine, Kazakhstan (2017).¹

Farm type	Russia ^{2,3}			Ukraine ²			Kazakhstan ³		
	n, thousand	Farmland, million ha	Share in total production, %	n, thousand	Farmland, million ha	Share in total production, %	n, thousand	Farmland, million ha	Share in total production, %
Agricultural enterprises	36.0	114.8	53.0	14.0	30.4	48.3	13.3	42.4	23.6
State enterprises	2.4 ⁴	8.1	n/a	0.2	5.7	1.9	0.7	1.5	n/a
Private enterprises	33.6	106.7	n/a	13.8	24.7	46.4	12.6	40.9	n/a
Agroholding-affiliated farms	3.2	24.3	22.8 ⁵	0.9	5.8	22.3	n/a	7.3 ⁶	n/a
Standalone farms	30.4	82.4	21.1 ⁵	12.9	18.9	24.1	n/a	33.6	n/a
JSCs, LTDs, etc.	16.2	42.1	17.1 ⁵	12.2	18.1	n/a	n/a	31.0	n/a
Agricultural cooperatives	14.2	40.3	4.0 ⁵	0.7	0.8	n/a	1.7	2.6	n/a
Production cooperatives	8.4	n/a	n/a	0.3	0.4	n/a	–	–	–
Service cooperatives	5.8	n/a	n/a	0.4	0.4	n/a	–	–	–
Farmers (peasant) enterprises	136.8	25.3	12.0 ⁷	33.7	4.6	8.7 ⁷	222.0	61.6 ⁷	28.2 ⁷
Individual entrepreneurs	38.0	3.3	n/a	29.6	n/a	n/a	30.2	n/a	n/a
Private household farms	23,500.0	34.7 ⁸	35.0	4,100.0	6.3	43.0	1,643.3	0.2	48.2
Total	23,710.8	178.1	100.0	4,177.3	41.3	100.0	1,908.8	104.2	100.0

¹ Data from: BBC (2019), Cabinet of Ministers of Ukraine (2019), Committee (2017), Kazakhstan Statistics Committee (2019), Laikam (2018), Ministry of Agriculture of Russia (2017), Ostapchuk *et al.* (2021), Rosreestr (2018), Rosstat (2019), UCAB (2019), Ukrstat (2017), Uzun *et al.* (2019, in press).

² Including Crimea.

³ Excluding pastures and hayfields.

⁴ Of them, 652 farms belong to 85 state-owned agroholdings.

⁵ Estimated share in total sales of agricultural production in current prices.

⁶ Based on authors' manual collection of agroholding-level data using various open sources of information.

⁷ Including individual entrepreneurs. Separate statistics for individual entrepreneurs are not available.

⁸ Private households control additional 15.2 million hectares of pastures and hayfields not included here.

Post script

We dedicate this special issue to the memory of Dr Fabio R. Chaddad. He was our former colleague, former member of the IFAMR editorial board and a scholar who played a leading role in initiating studies of large scale farming. He was one of the guest editors of the 2017 IFAMR special issue on agroholdings and mega farms (Vol. 20, Issue 2) which set the stage for future research that guided the current special issue. He passed away November 24, 2016, at the age of 46 just before publication of the 2017 special issue. He was affiliated with the department of Agricultural and Applied Economics at the University of Missouri and Insper in Sao Paulo, Brazil. Fabio was an internationally renowned expert and scholar with wide-ranging interests in the global agribusiness sector and was especially instrumental in stimulation of research such as is contained in this issue.

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