



Large and Small Organisational Forms of the Rural Economy: Correlation and Functional Limits

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This article is devoted to the problems that are relevant as Russia moves towards the global agricultural industry of technologies that replace the work of family groups. The authors give their opinion on the correlation and functional limits of large agribusiness and small forms of agricultural organisation. Being based on the material of the sample survey of Russian peasant farms and the results of the All-Russian Agricultural Census — which was first introduced into scientific circulation — the article substantiates the conclusion that in a modern mixed rural economy, a significant place is taken by the family commodity farms that demonstrate not only their natural advantages, but also adaptability to new technologies and market conditions.

Key words: *Agricultural industry, large and small organisational forms, family commodity farms, multi-structure, mass production, cooperation, state policy.*

Introduction

With the advancement in the economic activity and the process of replacing the worker's living labour with technology, the space for discussion in agricultural science expands. Traditionally, this branch of social production — associated with the natural cycle, which has limited possibilities for the operational division of labour and, therefore, is transcendental to wage labour — has been based on the “family cooperation” of the villagers, ensuring its efficiency with highly motivated labour.



However, there is a need, firstly, to provide large-scale processing industry with agricultural raw materials. Secondly, to increase the export potential of the agricultural sector (the historical experience of Germany and Russia at the turn of the nineteenth and twentieth centuries indicates that the most export-oriented farms were large and used wage labour). Third and finally, to intellectualise the economy. This creates the conditions for the replacement of some operations that do not require mandatory conscious participation of a person with artificial intelligence.

Thus, the problem of determining the functional limits of large entrepreneurial structures operating in agriculture and family commodity farms, the effectiveness of these forms of agricultural organisation, and therefore, the rational use of national resources, is actualised in the academic discourse.

This problem is especially relevant for the creation of a development strategy for the Russian agricultural sector, in which, as a result of export substitution policy, an obvious bias towards large agricultural organisations has been formed.

The tendency of its concentration causes legitimate concern for part of the academic community. Domestic economists reasonably note that as this process deepens, the risks associated with a slowdown in the agricultural production growth and its stagnation increase (Bashmakov, 2015).

Literature Review

The expansion of the large agribusiness sector led scientists to study the essential qualities of family commodity farms, ensuring their viability and competitive advantages with large agricultural enterprises (van der Ploeg, 2016). Agricultural economists point to the special adaptability of family farms to changes in market conditions (Hoppe, 2014). Agricultural researchers Kim and Lee (2010) examined the relationship between consumer satisfaction and the functioning of family farms in agriculture.

The problem of limited investment opportunities for family farms in comparison with large agribusiness was analysed by Sexton (2010). The differences between large and small forms of agriculture in attraction of credits were examined by Patrick et al. (2016).

Material and Methods

Thanks to the material first introduced into scientific circulation, this study attempts to determine an adequate ratio of large business and family commodity farms in the agricultural sector. The posed problem is relevant to global agriculture, in connection with the active



promotion of new technologies, which significantly transforms the traditional social-and-economic structure of agricultural production. The use of new material makes us doubt in the universality and absoluteness of the strategy, focused on the priority of large agricultural corporations development.

For the first time, the results of the 2016 All-Russian Agricultural Census in a systematic form were correctly described using statistical analysis methods.

The data of the peasant farms' surveys in the Belgorod, Lipetsk, Nizhny Novgorod regions and Krasnodar Territory conducted by the authors in 2017–2018 significantly reinforce the provisions and conclusions of the article. 397 heads of peasant farms were interviewed by a random sampling. At the same time, taking into account the specifics of livestock and crop farms, the survey observed the proportion of the sample of corresponding activity profiles. The marginal error of the survey results is not higher than 3.06 per cent.

Results and Discussion

There is no doubt, that in connection with the current changes in the nature of economic activity, the functional space of large industrially organised production in agriculture has expanded significantly. The advantages of large-scale agricultural enterprises in industries with a reduced environmental impact (for example, vegetable farming of closed soil) or technologies that artificially limit it (for example, industrial poultry farming), as well as, in innovative industries in which natural conditions are completely transformed by biotechnologies (for example, gene-modification, cloning, artificial production of products based on bio-molecular synthesis, etc.), are particularly obvious.

At the same time, non-universality of this way of agricultural development is obvious because the social movement for the use of exclusively natural products is gaining strength everywhere. According to the NIELSEN global study made in March, 2016, 68 per cent of respondents said they were willing to pay more for products that did not contain unwanted ingredients and were manufactured in a traditional way (NIELSEN, 2016). Russians are ready to pay up to 30 per cent of the cost of products for 'naturalness' (Zykova, 2016). Everyday life increasingly includes such concepts as 'natural nutrition' and organic products. The production of the latter involves even the exclusion of chemical insect repellents.

The same desire of consumers to get high-quality food, does not allow for the complete substitution of the environmentally friendly products delivered to the market by family farms with mass-produced goods.



In addition, small business forms — such as family-owned commodity farms — in comparison with large agricultural organisations — whose goal is to optimise profits — perform an important social function. Combining the strategy of personal consumption with commodity production, family working teams, firstly, significantly replenish the consumption of the rural population and reduce the supply chain of the product from the ‘field’ to the consumer. Secondly, they create favourable conditions for the widespread employment of the able-bodied population. Thirdly, by strengthening the viability of the villagers’ produce; the material potential for local self-government. As it is known, farming has always been, and is still considered, the basis of the local democratic level of rural self-government (Tokyil’, 1992). Indeed, the local democracy of the US self-government, provided with a material foundation, seems to be not a procedurally reduced, but essentially adequate level of American democracy today. On the contrary, the lack of this basis in the form of developed farming has become the main reason for slipping the local self-government in Russia, organised in accordance with the federal law "On General Principles of Local Self-Government Organisation" (Federal Law of Russia Federation).

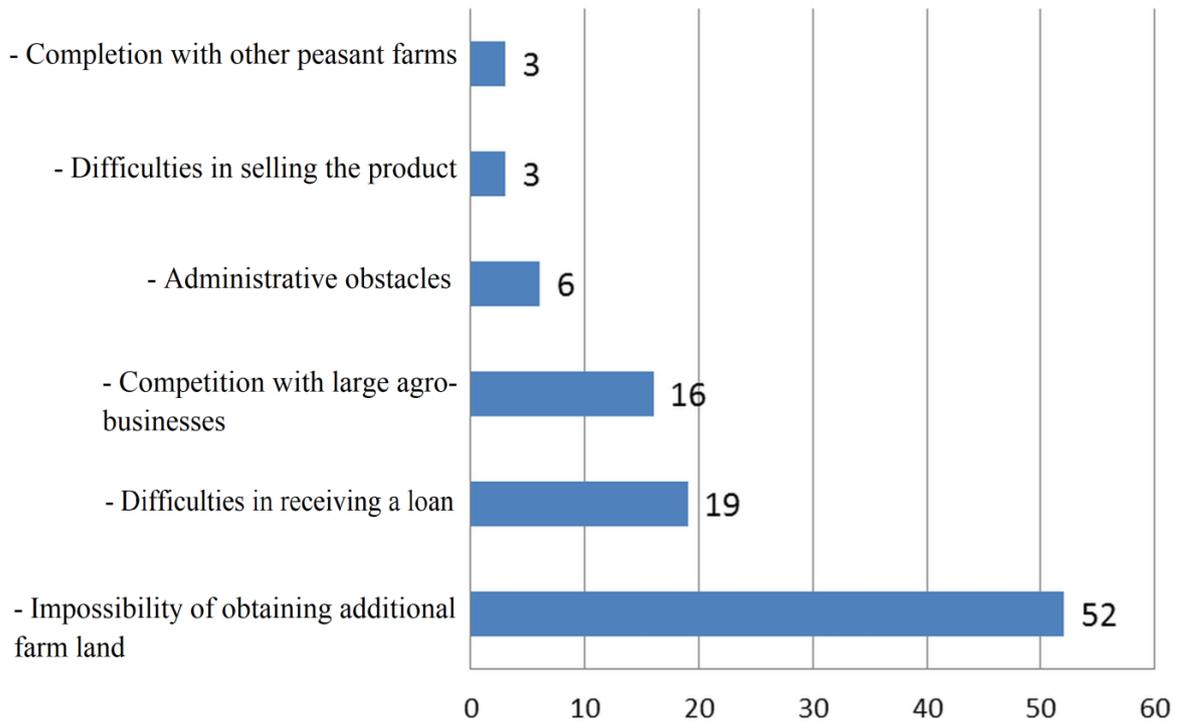
The remarkable Dutch agricultural historian, Jan Dauwe van der Ploeg (2016), called family farms a means of gaining "freedom from abusive relations of authorities" and considered the development of family farming a manifestation of the democratisation process.

The natural integration of the family institution of rural producers into the community organisation was the basis for Brox (2006) to recognise a mechanism for promoting democracy at the local level in family farms.

Vertically organised entrepreneurial structures that seek how to eliminate any costs will always be the antinomy of local self-government.

It should be mentioned, that the lack of local self-government has a destructive effect on the formation and development of farming. According to the survey of the heads of peasant farms conducted in 2018 in the Nizhny Novgorod, Belgorod, Lipetsk regions and Krasnodar Territory in Russia, more than 50 per cent of respondents noted an “inability to obtain additional farmland” as the main obstacle to the development of their enterprises, i.e. difficulty in resolving the problem directly related to the competence of local authorities.

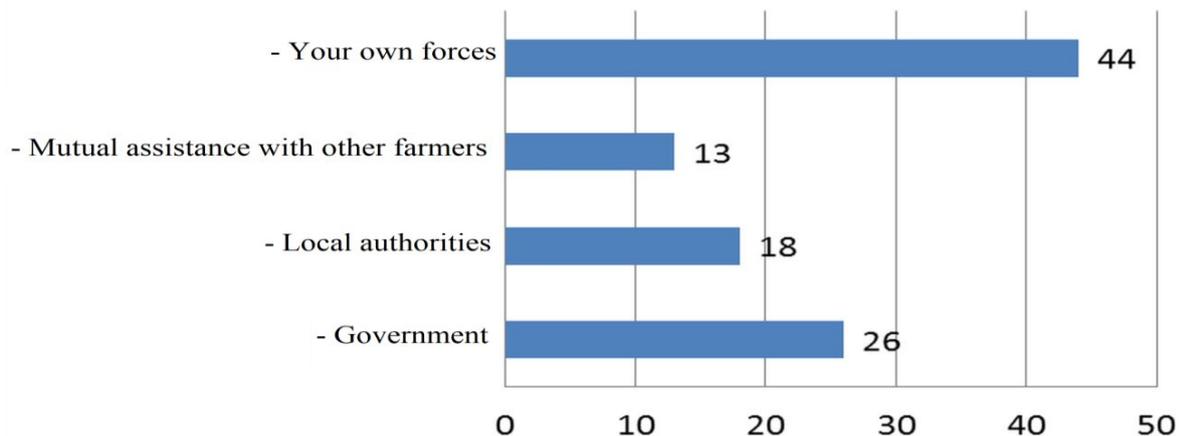
Fig 1. Obstacles to the expansion of peasant farms



(The results of survey of peasant farms’ heads, 2018)

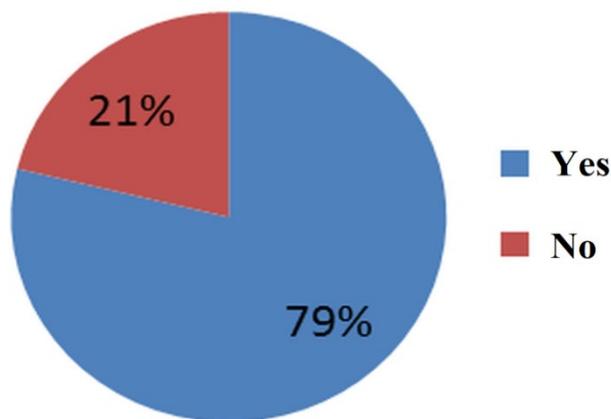
To the question “Whom do you rely on in improving the conditions of running a business?” 44 per cent of respondents answered “on their own strength”, and 13 per cent answered “mutual assistance with other farmers”.

Fig 2. Whom peasant farms most rely on to improve the economic conditions (the results of survey of peasant farms’ heads, 2018)



There is no doubt that competent self-government of farmers could be an important factor in creating favourable conditions for the development of their own farms and the emergence of new peasant enterprises. It is not out of place to note that the existing peasant farms are complementary, perceiving the neighbourhood of farmers as similar to themselves and not as competitors. According to the results of the same survey, only three per cent of respondents noted “competition with other peasant farms” as an obstacle to the development of their own enterprises. On the contrary, 79 per cent of respondents said that they effectively cooperate with family commodity households. On the other hand, large agribusiness organisations are perceived by small rural producers as obstacles to further development.

Fig 3. Did other peasant farms provide assistance to you?
(The results of survey of peasant farms’ heads, 2018)



Due to their unique natural qualities, small economic forms in general and family commodity farms, have no alternative and cannot be replaced by large agricultural organisations. They also have an exclusive functional ‘niche’ in the agricultural sector.

Le Roy Ladurie (1975) notes the social role of family farms as habitats, transferring traditions and cultural values. The special importance of family farms in societies as a continuity instrument of generations “living on the earth” is indicated by Whatmore et al. (1987). The susceptibility and adequacy of family farms to innovations, and the introduction of advanced technologies are justified by Osti (1991), Wiskerke and van der Ploeg (2004) in their studies. The dependence of the material well-being of family farms on natural living conditions, as Toledo (1990) notes, determines the careful attitude of family groups to the environment and makes them an important subject of the movement to maintain a healthy environment.

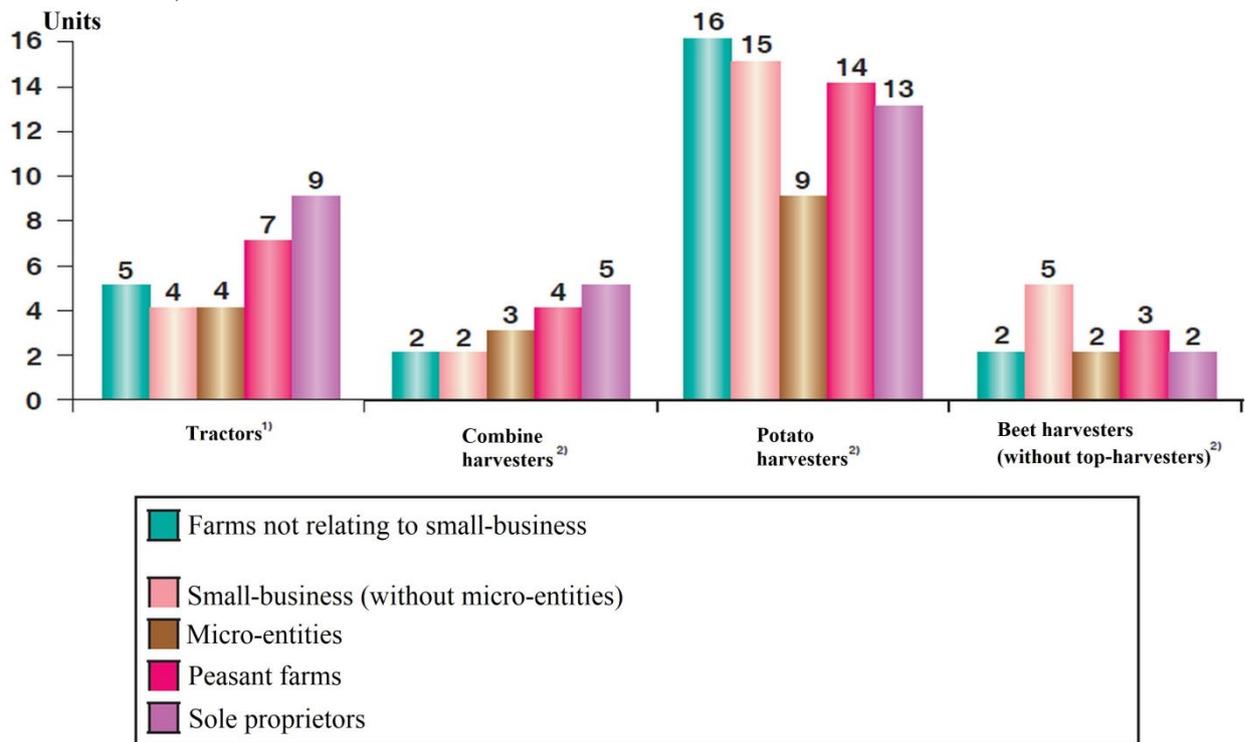
The highly motivated work of farmers more than covers losses due to the absence of a "scale effect" (Bashmachnikov, 2012). The same motivated work, intra-family organisation, integration of personal consumption and commodity production strategies, provide the

exceeding (by 20–30 per cent) level of gross income per unit of farmland of peasant farms in comparison with large agricultural corporations (Bashmachnikov, 2012).

According to a study organised by the Ministry of Agriculture of the Russian Federation in 2013–2014, 89 per cent of peasant farms were profitable, while this indicator in large agribusiness ranged from 72 per cent to 81 per cent, and the average profitability level of family farms (14 per cent) was two times higher than the profitability level of agricultural organisations (Bashmachnikov, 2016).

The results of the All-Russian Agricultural Census also give reason to doubt in the lack of an alternative of agricultural development strategy, focused on replacing small forms of organisation with large corporate business. So, other things being equal, the equipment of large agricultural enterprises with tractors per 1000 ha of sowing averages 5 units, and combine harvesters, 2 units. Similar indicators for peasant farms are respectively 7 units and 4 units (Federal State Statistics Service, 2018).

Fig 4. Provision of agricultural organisations (farms) with agricultural machinery (on July 1, 2016, in units)



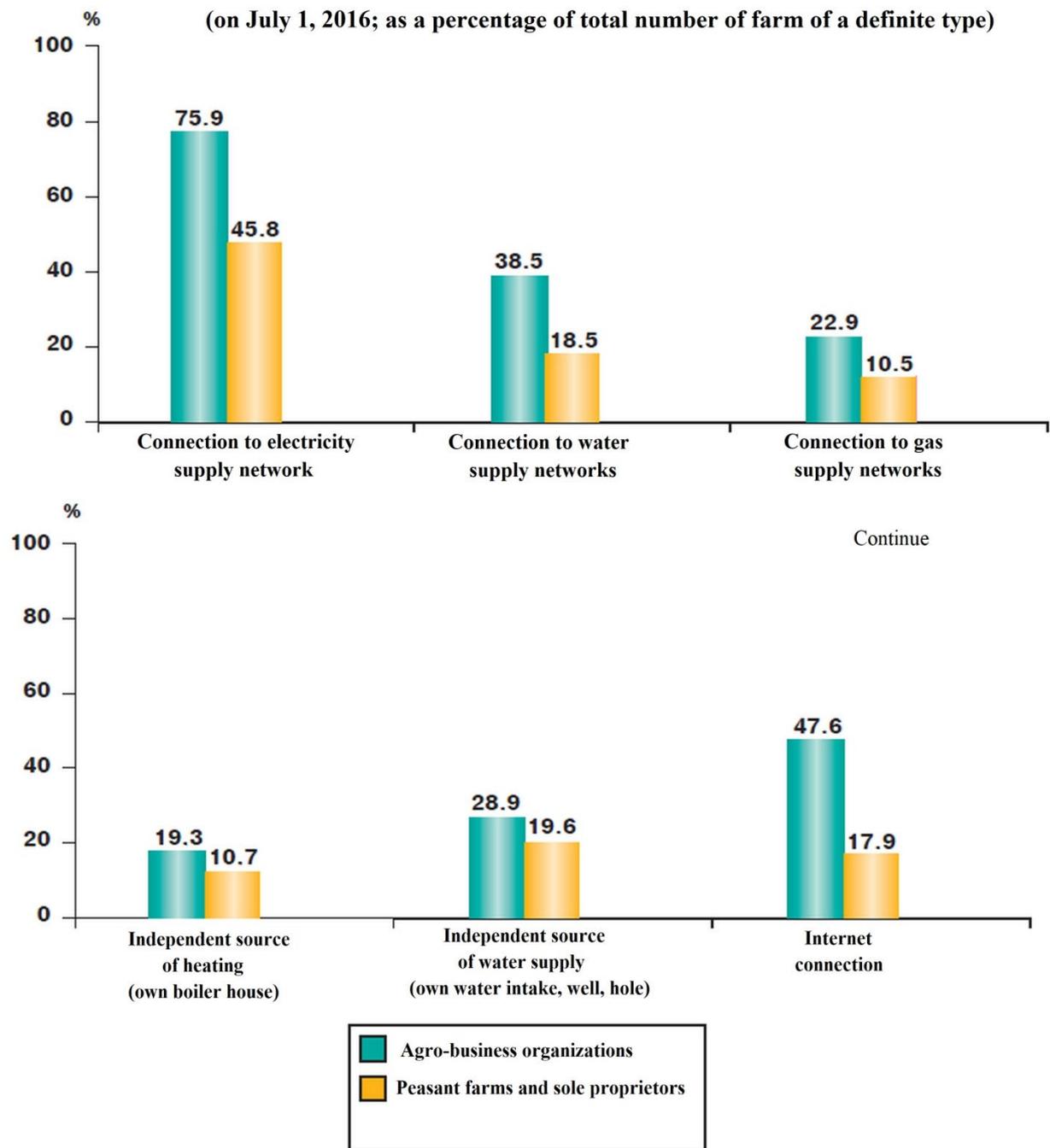
¹⁾ per 1000 ha of farm field

²⁾ per 1000 ha of seeding of respective plants

Moreover, the level of agricultural organisations' equipment with infrastructure is much higher than the level of equipment of peasant farms: in connection to the electricity supply

network, by 30.5 per cent; to water supply networks, by 20.0 per cent; to gas supply networks, by 12.4 per cent; by the availability of own boiler houses, by 8.6 per cent; by the availability of autonomous water supply sources, by 18.2 per cent; by internet connection, by 29.7 per cent; and by connection with paved roads, by 24.8 per cent.

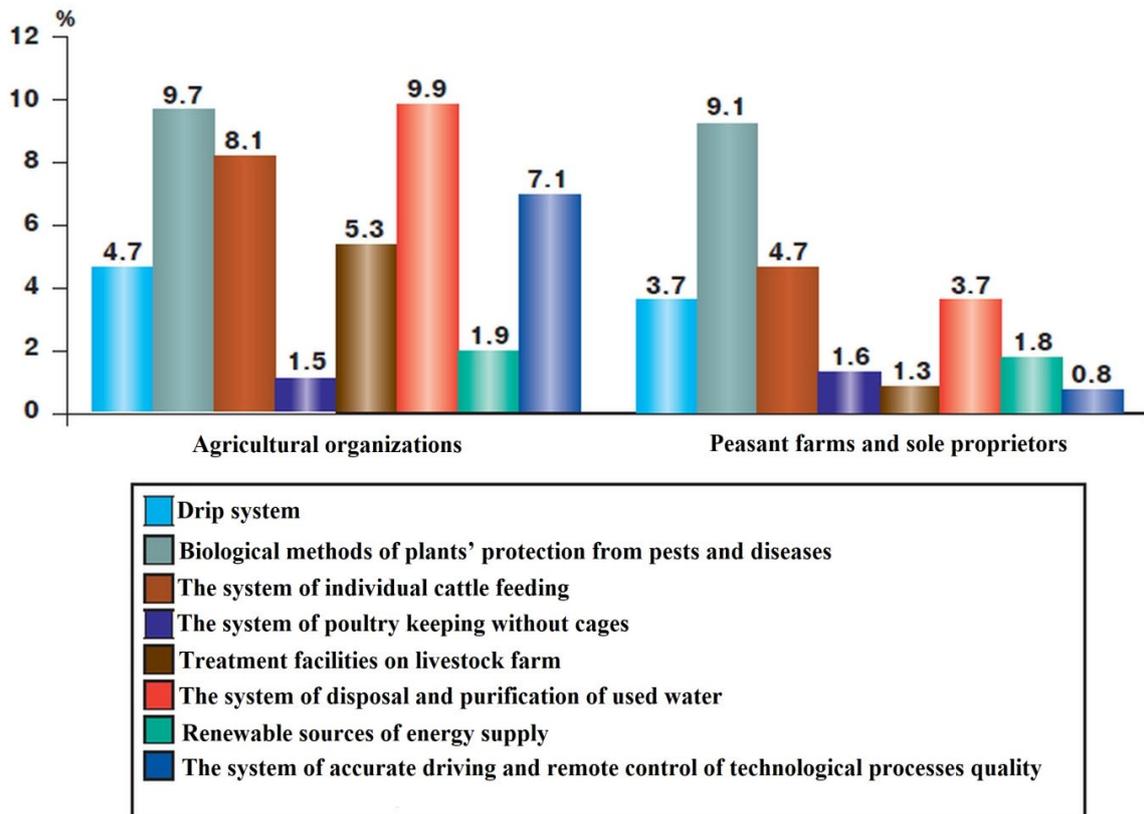
Fig 5. The proportion of agricultural organisations (farms) provided with infrastructure objects (Federal State Statistics Service, 2018)



The level of using the innovative farming methods in both organisational forms of agricultural industry is quite comparable.

Fig 6. The proportion of agricultural organisations (farms) applying innovative technologies (Federal State Statistics Service, 2018)

(on July 1, 2016; as a percentage of total number of organizations (farms) involved in agricultural activity)



Large agricultural enterprises and small business organisations have a comparable level of using the innovative technologies. The exceptions are those in which the superiority of agricultural organisations is explained by the lack of necessity for their use in family farms. For example, the individual feeding of cows, the presence of treatment facilities in livestock buildings and the treatment of production waste.

It is also indicative that the share of agricultural enterprises that attract credit funds for the purchase of machinery and equipment is less than the share of peasant farms using credit for the same purpose by 6.0 per cent; to increase the number of livestock by 6.3 per cent (Federal State Statistics Service, 2018).



Despite the advantages arising from natural qualities, and while retaining their place in a multi-structure rural economy, family commodity farms nevertheless have features that also — as in the case of large enterprises — determine their functional limitations.

Having as a backbone ‘core’ the work of a highly motivated member of a relative team, a family farm, within its qualitative identity, is transcendental to artificial intelligence, large-scale mass production, and is adequate to differentiate the technological and social statuses of relatives (UN, 2017).

In addition, family-owned commodity farms have limited investment potential and experience difficulties in obtaining credits.

The discussion on the relationship between family commodity farms and large business structures, if opposed, is counterproductive. The natural evolutionary course of development of the agricultural industry in market conditions will tick all the boxes in determining the functional space of each organisational form. Conversely, an attempt to create artificial preferences for one through the state policy, will inevitably lead to a distortion of the multi-structure agricultural economy, which threatens its stability. In addition to the destructive consequences, the one-sided approach that prevents the harmonisation of individual, collective and corporate interests, firstly, creates additional difficulties for the genesis and development of forms that remain outside the state control. Secondly, it deforms the content of the structure, which, according to the state, has priority value. Most often, such agricultural organisations become market-non-adaptive. This is evidenced by the negative experience of the destatisation of Soviet collective farms, which were unable to function in transition to the market economy.

The current bias of the Russian agricultural policy towards the creation of large agricultural organisations, does not produce healthy market relations in the industry and does not guarantee its stability. For example, the State Target Program “Development of the Production of Milk and Dairy Products for 2015-2020” (Government of Russian Federation, 2014) expects to annually increase investments in milk production from 51 billion rubles in 2016 to 82 billion rubles in 2020. However, the overwhelming majority of investments are not in peasant farms, but in agricultural organisations. It is planned to increase the number of dairy herds in large agricultural enterprises by 363 thousand animals by 2020, to increase the average cow productivity in these organisations to 6.5 thousand kg (increase the current figures by 2 thousand kg). In 2018, 88 investment projects were implemented in Russia. Of these, the largest 15 accounted for almost 77.8 per cent of the investments planned for that year (Government of Russian Federation, 2014).



However, despite the impressive volume of investment in the dairy industry, the expected rate of increase in milk production (up to 2020 by 8.7 million tons) cannot be achieved. According to the Federal State Statistics Service, neither in 2018, nor in 2019, nor by the end of the Program in 2020, was it possible to solve the problem of the import substitution of dairy products. With a gross production of 31 million tons, the shortage of domestic raw milk is still 8–9 million tons. The import of dairy products to Russia in January-April 2019 (in annual terms) increased by 23 per cent, and palm oil by eight per cent (Nezavisimaya gazeta, 2019, a).

Indicative data on this subject is presented in a study by Surovtsev et al. (2016). In their work published in 2016, the researchers noted that the cost of one litre of milk on a hyper-farm built in 2007-2014 in European Russia was only three-and-a-half rubles below the market price (22.3 rubles), despite the fact that the cost recovery for their creation was 14 rubles per one litre. Even considering state subsidies (six rubles per one litre), such a profitability of large dairy farms does not ensure their viability and return on investment (Bashmachnikov, 2016).

According to a sample survey of family livestock farms conducted by APFACR (Association of Peasant Farms and Agricultural Cooperatives of Russia) their cost per litre of milk ranges from 10 to 14 rubles. Thus, the profit in calculating the average selling price is more than 50 per cent, and the construction and maintenance of one cattle stall costs two, three times cheaper in comparison with large dairy complexes (Bashmachnikov, 2016).

An obvious example of multi-structural agriculture is demonstrated by the American agricultural industry. The current structure of US agriculture is as follows.

Table 1: US Gross Cash Farm Income Classification (GCFI) (US Department of Agriculture, 2017)

Farm Type	Characteristic
1. Small family farms (GCFI <350,000 US dollars).	Small farms whose principal operators report they are retired, although they continue to farm on a small scale
	Small farms whose principal operators report a major occupation other than farming
	Small farms whose principal operators report farming as their major occupation. Farms can be either low-sales: GCFI less than \$150,000 or moderate-sales: GCFI between \$150,000 and \$349,999
2. Medium-sized family farms (GCFI 350,000 to 999,999 US dollars).	
3. Large-scale family farms (GCFI \$ 1 million or more).	Large family farms. Farms with GCFI between \$1,000,000 and \$4,999,999
	Very large family farms. GCFI is \$5 million or more.
4. Non-family Farms: any farm where the principal operator and persons related to the principal operator do not own a majority of the business	

Family farms, which form the basis of the US agricultural industry, have a structure that is consistent with their level of solvency and marketability. Of the total number of family farms, 88 per cent are small. Despite the fact that these farms own almost half of all land and real estate (buildings and structures), they account for only 20 per cent of marketable products. Large-scale family farms account for half of hog production and two-thirds of both dairy production and fruits and vegetables.

Large agricultural corporations process no more than 10 per cent of the farmland (Chernyakov, 2011). In addition to the fact that US agriculture has a complex structure, including both small and large forms, the state creates the conditions for their harmonious complementarity and conflict-free existence. For example, to preserve the economic independence of grain farms after the Second World War, cooperative grain storages with state participation were created, which made it possible to avoid their dependence on large monopolies selling crop products.

In the United States potato industry, a constructive tandem has been developed between the major chip makers and the potato farms supplying them with raw materials. At the same time, processing corporations, among other things, take the responsibility of supplying farms with

seeds and fertilisers. US dairy herds are distributed between large and small producers about half to half.

On the contrary, in connection with the import substitution policy in the Russian agricultural sector, there has been a clear bias towards the creation of large agricultural corporations. Which, in addition to the constructive potential, carries a number of drawbacks, which it is not possible to eliminate within the framework of this organisational form. More than half of the agricultural products in Russia (53 per cent) are accounted for by the largest corporations with revenues of more than 5 million US dollars. 41 per cent of agricultural organisations account for slightly more than 1 per cent of revenue, while 1.7 per cent of agricultural enterprises account for more than 45 per cent of revenue. Firstly, such a structure of the Russian agrarian sector impedes the uniform access of economic entities to the state funds for agricultural producers' support. Almost half of them generally do not have access to the state support or receive less than one million rubles, while 1.2% of agricultural organisations receive 41 per cent of all funds allotted by the state to support the agricultural sector (Shagajda and Uzun, 2017). Secondly, the desire to optimise profits does not encourage corporations to attract the masses to production, that is to participate in solving the problem of employment and recruiting rural people into economic activity. Thirdly, being, as a rule, single-industry, large agricultural holdings practically do not contribute to the saturation of regional consumer markets and position their own economic interests outside the territory.

According to the data published in the report of the Institute of Economics of the Russian Academy of Sciences, there are no jobs in twelve thousand Russian villages (about 10 per cent of the total). In every tenth such settlement, there are no permanent residents, and in every fourth, the population consists of only a few households (Bashkatova, 2019).

At the same time, the researcher of the agricultural sector of the post-Soviet countries, Lerman (2012), argues that family farms are based on the motivated work of the family. Therefore, are much more effective in comparison with non-family forms of organisation and can become "points of restoration of agricultural growth" in Eastern Europe. A comparative analysis of labour productivity in agricultural enterprises of various organisational forms showed that in peasant commodity farms "significant growth is observed due to higher incentives in family farming" (Lerman, 2001; Lerman, 2009).

Contrary to the fears of supporters of agriculture development through the promotion of large agricultural holdings, the birth of large-scale agricultural organisations in the countryside — as international experience shows — can occur on the basis of the cooperation of family commodity farms.



In the USA, 35.5 per cent of milk produced by farmers and 39.8 per cent of seeds are sold through cooperative associations (USDA, 2014). There are 1,500 cooperatives in Canadian agriculture, of which four million farmers are members. Moreover, each farmer is simultaneously a member of several cooperative associations operating in marketing, supplying, processing or joint operation of equipment. Cooperatives of Canada sell over 50 per cent of grain and oilseeds, 36 per cent of fertilisers, 21 per cent of animal feed, and 19 per cent of seeds (SELCOOP, 2017).

In the Russian agricultural sector, agricultural cooperation is at the initial stage of its development. According to Russian Statistics (2018), in all types of cooperation, no more than 12 per cent of peasant farms participate (3.3 per cent in processing, 3.1 per cent in sales, 1.4 per cent in supply, 0.9 per cent in servicing, 3.1 per cent in credit, 0.03 per cent in insurance, and 0.17 per cent in others).

The reasons for the relatively slow development of cooperation in Russian agriculture may be the subject of special consideration. We only note that measures of state policy in the field of cooperation should not be aimed at increasing the material viability of family farms and increasing their marketability. Cooperation is a form of organisation of commodity production and necessarily arises among commodity producers who need to combine material and physical efforts to increase the efficiency of their own enterprises.

It is impossible to pass the genesis stage of the rural commodity producer in the initiation of cooperation. The achievement of this should become the main guideline of the state cooperative policy. In 2018, according to the report of the Ministry of Agriculture of the Russian Federation, 11.7 billion rubles from the federal budget (29.45 per cent of all subsidies directed to agriculture) were allotted to support farming. According to *Nezavisimaya Gazeta* (2019, b), the average grant amount to beginner farmers was 2.07 million rubles (16.4 per cent more than in 2017). The grant for the development of family livestock farms amounted to 7.72 million rubles (26.5 per cent more than in 2017).

At the same time, the argument made by Russian President V. Putin to justify the current volume of state support to farmers in answers to the Direct Line is doubtful: “Last year the total amount of support for the agricultural sector was 254 billion rubles, this year - over 300-303 billion. I mean export support. And of the total amount of this support, somewhere around 45% falls on large farms, and on farms - 16% (about 45 billion rubles). The market share held by the farmers – they are increasingly providing products – today is 12%. What does it mean? It means that the amount of support is greater than the market share the farmers held now” – Putin emphasised (*Nezavisimaya Gazeta*, 2019b).



At the same time, the adequacy assessment of the state support for family farms in terms of their contribution to the country's commodity products is not correct. Since a significant proportion of the products produced by family farms goes directly to the reproduction of their labour, physical, social-and-cultural potential, while the commodity production of an agricultural organisation entirely focused on making a profit. To compare the level of marketability of these forms of agricultural organisation, means not to consider the features of their essential qualities.

Conclusion

Thus, despite the qualitative changes in the social-and-economic structure of the world agricultural sector and new opportunities for mass production due to innovations, family commodity farms remain one of the most stable and in demand segments of a rural multi-structure economy. Firstly, because they retain their natural advantages, consisting, first of all, in the high motivation of labour, which is necessary in the sector dealing with the natural environment. Secondly, in their adaptability to market conditions. Thirdly, in their susceptibility to advanced technology. Fourthly and finally, in the high level of their socialisation.

At the same time, like any other form of economic organisation, family commodity farms are not without limitations and therefore, occupy a functionally defined space in the agricultural industry.

The boundaries of demand for small forms of agricultural production, like any other, are formed as a result of market mechanisms.

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