Factors that facilitate development of small agricultural cooperative farm alliances

O Afanaseva\textsuperscript{1,}\textsuperscript{a}, V Elmov\textsuperscript{2,}\textsuperscript{b}, E Ivanov\textsuperscript{1} and A Makushev\textsuperscript{3}

\textsuperscript{1}Department of Accounting, Analysis and Audit, Chuvash State Agrarian University, 29 K. Marx street, Cheboksary 428003, Russian Federation
\textsuperscript{2}Department of Informatization, Chuvash State University named after I.N. Ulyanov, 15 Moskovsky prospect, Cheboksary 428015, Russian Federation
\textsuperscript{3}Department of Finance and Credit, Chuvash State Agrarian University, 29 K. Marx street, Cheboksary 428003, Russian Federation

\textsuperscript{a}E-mail: oafanaseva@spcu.ru \hspace{1em} \textsuperscript{b}E-mail: v.elmov@chuvsu.ru

Abstract. Although cooperative movement in Russia has a pretty long history, achieving its proper functioning failed for a variety of reasons. With new support measures in place, namely, to establish a basic infrastructure – since 2015, to acquire assets and farm equipment, agro-processing equipment – since 2019, cooperatives in Russia geared to promoting small farms are expected to flare up. In this context, this paper reviews key statistical indicators of the current structural changes in agro-industry, as well as the health and contribution of small farms to the agricultural industry in general. This work aimed to identify preconditions for Russian farmers to form cooperatives. This is of the utmost importance since small farms produce nearly half of the country’s total agricultural output, own 37% of arable land, 56% of cattle, and ensure a quarter of employment. Through the research, a range of malpractices affecting the progress of small farms has been identified. They are dearth of modern technology, efficient staff, impossibility to invest in working capital, problems with marketing of produced goods, etc. Creating well-functioning agricultural cooperatives will address the above challenges today’s Russian farmers face.

1. Introduction

In Russia, cooperatives have unusual path of development. Towards the end of the Russian Empire, cooperative movement was strong, and it had equally potent development (although in a whole new direction) in the Soviet era. However, according to some academics, back then agricultural cooperatives were public policy tools first and self-help organizations next \cite{1}.

In 1990, just before the transition period, Russia’s farming included nearly 12,800 communal farms and 13,000 state-owned farms. Each of these farms managed on average some 7,800 ha of arable land with 320 regular workers. At the same time, there was also an important household production sector which included nearly 14,000,000 rural farms that provided a high proportion of food \cite{2}. Agricultural economists argued that decollectivization can take place one way only – toward upping the number of private family farms that were dominating worldwide \cite{3}. However, other researchers noted that communal farm leaders discouraged their members to become independent farmers since they were keen to maintain the pre-reform status quo \cite{4}.
Thus, despite Russia’s long history of cooperatives, they are still in an upward spiral: from rapid growth (in the early 90s of the 20th century – following the Law on Cooperation in the USSR of 1988; since the National Priority Project for Development of the Agro-Industrial Complex of 2006 – in agriculture) to plummeting. We believe, agricultural consumer cooperative program to build basic infrastructure and a range of other facilitative measures launched in 2015 became the whole new stage in the development of cooperatives, which was comprehended by its key stakeholders, namely:

- agricultural producers, who despite serious economic and geographical challenges between agribusinesses, begin to understand the need to unite into larger undertakings to address common economic concerns;
- the State giving the main impact to the development of the sector, on the one hand, but forms a protectionist policy that runs counter to international standards and rules, on the other hand. Avoiding maneuvering between domestic and foreign policy is possible only with strong institutional framework in place. That is, agro-industry stakeholders – agricultural producers, will be able to both ensure national food security and efficiently protect their interests in the market and legal sectors. In this context, foreign experience shows that cooperation is an institutional framework that promotes stable functioning of the agricultural industry.

However, according to preliminary data of the 2016 All-Russian Agricultural Census (RAC-2016), only 3.6% of the national agricultural organizations (AO) and 4.1% of peasant farmer holdings (PFH) are members of agricultural consumer cooperatives (ACoC). ACoC’s involvement in the delivery of soil tillage, crop sowing and processing services to private farms (PF) is 0.1%, in purchase of farmers’ surplus is about 6%. Despite that agricultural production cooperatives have proved effective and are the most dominant type of agricultural enterprises in certain regions (such as the Nenets Autonomous Okrug, Bryansk region, Kirov region, Tver region, the Chuvash Republic, etc.), it is questionable whether they will be effective in the future as well [5].

In their works, a number of foreign colleagues also often raise issues of concern whether various types of communal farms will continue to function in the future. For example, in China, an innovative form is relatives sharing farming [6]. Italy also looks for ways to focus on development of local initiatives [7]. Brazil takes on new challenges for cooperatives due to market globalization [8].

Currently, a number of works by both domestic and foreign scientists demonstrate the benefits of cooperation. In particular, farmers who have joined cooperative associations may enjoy further opportunities: negotiating power [9], improved income and social status for farmers [10], improved working conditions and market access [11], enhanced farmer’s participation in the value chain and mutual trust [12], administrative intervention to quickly break down barriers to the development [13]. However, despite the concept of synergistic effect of cooperation, these authors did not identify objective preconditions for Russian agrarians to unite into cooperatives. Therefore, the purpose of this work was to identify objective preconditions for Russian agrarians to unite into cooperatives.

The selected focus of the study is relevant both for Russia where rural population and economically active population employed in agriculture keeps shrinking, and for the entire world, since food security and maintaining the farmers continued competitiveness are the most pressing issues.

2. Analyzed farms

To answer the question, the following stages of analysis have been completed in this paper: monitoring of performance and resources needed by small farms. Deliverables were then compared with the performance of more sustainable agricultural organizations; pinpointing of bottlenecks and reserves to improve performance of those categories of agricultural enterprises that need it. When compiling certain statistical indicators, we used those from International Methodological Approaches to Assessing Structural Changes in Agriculture by Dr. Zvi Lerman, namely: gross output, resources, land, logistics, labor, institutional forms of agricultural producers [14].

The objects of analysis were agricultural organizations (AO), PFH and private farms (PF), since these categories of farms formed the bulk of those employed in agriculture and produce agricultural products. At the same time, agricultural organizations account for more than 50% of manufactured products, 35%
of private farms and 12% of farms. Agricultural organizations are the most sustainable forms of management, as they have a large amount of land, fixed assets and other resources. Their activities are multidirectional (several areas of production are developing at the same time), can have a great impact on the life support and functioning of municipal districts or entire subjects. Peasant (farmer) holdings is a relatively new phenomenon for Russia - these are small farms, mainly operating in one or more related agricultural industries. Basically, young hereditary villagers are employed in this direction, who have received special industry education or learned to engage in agriculture from their parents. Private farms are rural population engaged in agriculture to meet family needs for food. This direction in Russia is gradually becoming obsolete.

3. Stages of determining the volume of production and available resources of different categories of farms

The purpose of this work is to identify objective preconditions for Russian agrarians to unite into cooperatives. To reveal this goal, various categories of farms in the agricultural sector were analyzed in terms of gross production, resource potential and labor resources. If the proportion of indicators for small forms of farming (PFH and PF) decreases, respectively, these categories of farms need support. One of the possible areas of support is the creation of their associations.

3.1. Gross output and its structure

Gross output of agricultural products grows every year [15]. In 2016, both agricultural organizations and small farms equally contributed to food production: 52.5% and 47.5%, respectively (table 1).

| Farms  | Farm produce, bln RUB | Progress | Structure, % | Farm produce per 1 employee in 2016, thous. RUB |
|--------|----------------------|----------|--------------|-----------------------------------------------|
|        | 2006 | 2016 | 2016 with prices of 2006 | 2016 vs. 2006 | 2016 with prices of 2006 | 2006 | 2016 | |
| AO     | 704.5 | 2890.4 | 1273.3 | +4.1 p. | +80.7% | 41.2 | 52.5 | 2343.8 |
| PFH    | 112.1 | 664.2 | 292.6 | +5.9 p. | +161% | 6.5 | 12.1 | 1811.1 |
| PF     | 894.7 | 1951.1 | 859.5 | +2.2 p. | -3.9% | 52.3 | 35.4 | 47.9 |

Herewith, performance of agricultural organizations improves over time: both per 1 employee and for the organization in general: from 41.2% in 2006 to 52.5% in 2016. Farms also gains market share, which is typical for a growing economic sector. When analyzing private farms, a remark should be made: individual farms mainly focus to feed and secure job for themselves and their families which explains low rate of changes, such as in output growth which reduces to nothing when adjusted to 10-year inflation.

It is important to note that each of the analyzed farm categories has its own concerns: according to data from the Russian statistics office, the number of agricultural organizations and farms are dropping, while more families engage in agriculture (+11.8%, table 2), although this is amidst rural depopulation [17].

| Year  | AO  | PFH | PF   |
|-------|-----|-----|------|
| 2016  | 36.0| 259.2| 53.1 |
| 2006  | 59.2| 294.2| 47.5 |
| Progress, 2016 in % vs. 2006 | -39.2% | -11.9% | +11.8% |
3.2. Resource potential

With the number of agricultural organizations decreased by 39.2\% over 10 years, the size of agricultural land under their management falls by 31.8\%, which proves that there is a process of further consolidation of these categories of agricultural enterprises (table 3).

Table 3. Size of agricultural land, mln ha [16, 18].

| Farms | Year | Progress, 2016 vs. 2006 | Structure, % | On average per farm, ha |
|-------|------|------------------------|--------------|------------------------|
|       | 2006 | 2016                   | 2006         | 2016                   |
| AO    | 132.3| 90.2                   | -31.8\%      | 79.7                   | 63.2                   | 2234                  | 2502                  |
| PFH   | 24.1 | 39.6                   | +63.9\%      | 14.5                   | 27.7                   | 85                    | 226                   |
| PF    | 8.8  | 12.9                   | +47.3\%      | 5.3                    | 9.0                    | 0.4                   | 0.6                   |

Small farms also consolidate into larger units: farms own an average of 226 hectares of land per farm, which is 2.7 times more vs. 2006. Lands of private farms also increase. However, as compared with the figures for the above-mentioned types of farms, the increase is minor. It should also be noted that farms related production output over the past 10 years is 1.6 times higher (table 1), while the size of agricultural land increased by 63.9\% (table 3).

Grain- and legume-sown area increased for all categories of farms. Agricultural organizations became 2.6 times larger, or they grew by 935 ha on average per farm; private farms also broadened – up to 49 ha per a farm, which is 7.0 times more vs. 2006. PHF sown area is 85 ha, growing 2.7 fold over 10 years (table 4).

Table 4. Grain- and legume-sown area, mln ha [16, 18].

| Farms | Year | Progress, 2016 vs. 2006 | Structure, % | Number of tractors per 1000 ha of agricultural land, units |
|-------|------|------------------------|--------------|----------------------------------------------------------|
|       | 2006 | 2016                   | 2006         | 2016                                                     |
| AO    | 34.4 | 54.6                   | +59.0\%      | 78.6          | 68.9          | 580                  | 1515                  |
| PFH   | 9.0  | 22.0                   | +144.4\%     | 20.6          | 27.8          | 31                   | 85                    |
| PF    | 0.3  | 2.6                    | +766.7\%     | 0.8           | 3.3           | 7                    | 49                    |

In animal husbandry, the situation is quite different: over 10 years, the number of cattle has dropped both in agricultural organizations (by 23.4\%) and in private farms (by 27.6\%), while the number of animals per a farm on average has increased (table 5).

Table 5. Number of cattle, mln head of cattle [16, 18].

| Farms | Year | Progress, 2016 vs. 2006 | Structure, % | On average per farm, head of cattle |
|-------|------|------------------------|--------------|------------------------------------|
|       | 2006 | 2016                   | 2006         | 2016                               |
| AO    | 11.2 | 8.6                    | -23.4\%      | 47.7                  | 44.4                  | 587                  | 785                  |
| PFH   | 1.0  | 2.6                    | +160.0\%     | 4.2                   | 13.3                  | 28                   | 62                   |
| PF    | 11.3 | 8.2                    | -27.6\%      | 48.1                  | 42.3                  | 3                    | 5                    |

On one hand, herd expansion in growing peasant farm households has the potential to increase milk production and address challenges related to availability of dairy products to the population (according to Federal State Statistics Service, in January-September 2017, cheese import was 27.0\% of the total resources, powdered milk and cream import – 57.1\%). Yet, on the other hand, while agricultural organizations increase their output through intensification: subject to the reduction of agricultural land and herd size; farms develop extensively.
The share of private farms engaged in animal husbandry reduces every year. This is expected: on one hand, raising cattle is a very labor-intensive process with sometimes 10- or more-year payback time, on the other hand, households always have product sales problems: poor quality of goods, or selling price falls below the costs incurred.

3.3. Logistics
Availability of agricultural machinery for commodity producers is a big and totally different problem. Tables 6 and 7 show that the number of tractors and combine harvesters for relevant types of area reduces.

Table 6. Agricultural tractor inventory, thous. units [16, 18].

| Farms | Year | Progress, 2016 vs. 2006 | Structure, % | Number of tractors per 1000 ha of agricultural land, units |
|-------|------|-------------------------|--------------|----------------------------------------------------------|
| AO    | 2006 | 511.2                   | -42.3%       | 76.3                                                     | 3.9 |
|       | 2016 | 295.0                   | +3.9%        | 60.8                                                     | 3.3 |
| PFH   | 2006 | 158.8                   | +20.0%       | 23.7                                                     | 6.6 |
|       | 2016 | 190.5                   | +4.8%        | 39.2                                                     | 4.8 |

Table 7. Combine harvester inventory, thous. units [16, 18].

| Farms | Year | Progress, 2016 vs. 2006 | Structure, % | Number of tractors per 1000 ha of agricultural land, units |
|-------|------|-------------------------|--------------|----------------------------------------------------------|
| AO    | 2006 | 134.0                   | -43.9%       | 20.0                                                     | 3.9 |
|       | 2016 | 75.1                    | +3.9%        | 15.5                                                     | 1.4 |
| PFH   | 2006 | 54.0                    | +16.3%       | 8.1                                                      | 6.0 |
|       | 2016 | 62.8                    | +2.9%        | 12.9                                                     | 2.9 |

This suggests that with expanding production (as previously mentioned, that all types of farms are enlarging), producers lag in providing themselves with extra equipment. However, a comment should be made to see the situation better we need to assess available capacities, since quantitative calculations may distort the data. This is because modern equipment is more powerful and thus has greater potential.

3.4. Labor resource endowment
Currently, 74.6% of the population is engaged in production in agricultural organizations. Despite that, it is 9.1% less than 10 years ago but still more than a half (table 8). The largest drop in rural workers is observed in agricultural enterprises. The number of workers decreases in farms and in households as well.

Table 8. Number of workers in agricultural production [16, 18].

| Parameters | Number of workers, thous. ppl | Share in the structure, in % |
|------------|--------------------------------|------------------------------|
|            | AO                             | PFH                          | AO | PFH |
| 2016       | 1233.2                         | 366.7                        | 40.7 | 74.6 | 22.2 | 3.2 |
| 2006       | 2836.6                         | 505.9                        | 47.5 | 83.7 | 14.9 | 1.4 |
| 2016 vs. 2006, % | -56.5% | -27.5% | -14.3% | x | x | x |

Thus, the existing institutional framework that has developed in rural regions no longer satisfies agricultural population. As a possible option to address the situation, the authors suggest to build sustainable institution of agricultural cooperation. Russia’s Ministry of Agriculture finds Lipetsk and Tyumen regions, as well as the Republic of Sakha (Yakutia) to be the best regional practices to develop agricultural cooperation. Flagship parameters are those of the Lipetsk region which has 15% of the total number of ACoC in Russia, including nearly a quarter of credit and supply cooperatives (figure 1).

Overall, in the country, the situation is as follows: the number of ACoC drops on average by 5% per year, credit consumer cooperatives (CCC) decreased by 12% to 1 882 entities over the past 3 years,
agricultural production cooperatives (APC) – by 18% from 10 752 entities in 2016 to 8 789 entities in 2018 (figure 2). Newly created ACoC lag in replacing “older versions” of cooperatives that are shutting down, while the current situation with CCC and APC remains unclear, therefore these categories have the largest decline.

To further develop the cooperative sector, a comprehensive approach should be envisaged to address farmer challenges. Figure 3 shows the major pillars for the development of the cooperative sector, elaborated by the authors on the basis of the current public policy.

Applying these measures is a systematic approach to develop all types of cooperatives. In an increasingly competitive food market environment, the development of agricultural cooperation is a salient factor in the development of small and medium-sized agribusiness.

4. Comprehensive programs to stimulate the development of agricultural cooperatives

Currently, the State is implementing the following measures on the territory of the country:

1. Applying upward mobility when providing grant support to small farms (including beginner farmer grant (RUB 1.5-3.0 mln), family livestock farm development grant (RUB 21.6-30.0 mln), agricultural cooperative infrastructure development grant (up to RUB 70 mln) and other types of state support (easy-term loans, etc.).
2. Implementation of the national project Small and Medium Entrepreneurship and Support for Individual Entrepreneurial Initiative within Building a farmer support system and development of rural cooperation (for agricultural startups, consumer cooperatives and competence centers).

3. Support for export-oriented cooperatives.

4. Implementation of the priority project Small Business and Support for Individual Entrepreneurial Initiative (in 10 regions implementing agricultural cooperation development programs).

Thus, Russia’s agricultural cooperative sector is on rush, comprehensive stimulus programs are being implemented: institutional, legislative, project management of ten “mentee” regions, subsidy assistance, etc. However, the following is obvious: in order to build a self-standing mechanism, efforts must be made to ensure that process owners – cooperative societies – also have the opportunity to participate in the formulation and implementation of the national agricultural cooperative policy. This is the only way to build a new self-sustaining body which will be engaged both in production and social and public life of agricultural producers and ensure sustainable functioning of the agricultural sector. Herewith, the author concurs with the view of scientists that Russia still has a number of specific problems, the so-called Soviet legacy, which are not traditional in Western cooperative cooperation scheme, namely, no bottom-up initiatives [19]. Also, Perm scientists also point in their work to poor initiative of agrarians [20].

Measures suggested by the team aimed to improve the cooperative management system, build infrastructure, develop markets and improve physical facilities are an integrated approach in contrast to works previously offered by researchers. For example, R. Nekrasov more examines general conditions necessary to develop agricultural cooperation (for example, sustained financial support, access to information, an optimal legal framework, cooperative staff trainings) [13]. Kazan scientists also noted that cooperation needs comprehensive development, namely, break down unnecessary barriers, regulate public support, and raise awareness [21]. These areas are surely important, yet, fragmented and defocused, engaging many performers. In his work, I. Minakov draws more attention to arranging public support, affordable financial and credit resources [22]. Finally, E. Nikolaeva also focuses on the need to revise and regulate public support [23]. However, subsidies alone will not address the global issue of rural cooperative development. As the authors noted earlier, a comprehensive approach featured in the paper is needed. International researchers also offer their drafts for agricultural cooperative sustainable development: optimize the management structure, update the laws (Bulgaria) [24], introduce a system of tax incentives in Romania [25] and so on.

5. Conclusion

Despite the rich and at times painful history of cooperative development in Russia, we have to admit that today’s global challenges can be addressed neither by minorities nor individuals. This is the most important prerequisite that backs up the need to create cooperatives for small farms in the rural areas. Unfortunately, the surveys show that agricultural producers often are not willing to form alliances for joint problem solving [26]. Based on past experience, they do not trust each other, do not trust institutional structures. Therefore, although it is important to financially support newly-created cooperatives, educational and infrastructural aspects also need attention, so that small farms could learn foreign practices, share best practices with their colleagues, create awareness, prepare to actively utilize regulatory framework so that there remains no doubt that cooperation is effective.

Key measures to develop cooperation, formulated by the authors, cover few areas – development of the management system, building infrastructure, develop markets and improve physical facilities which is an integrated approach. A systematic vision of key challenges allows to better analyze negative developments in the agricultural sector and, thus, make informed decisions to stimulate various areas in agricultural cooperative operation (starting from infrastructure and logistics to the transparency of information resources and public support).

Account must of course be taken that each country has its own national issues resulting from development experiences and recent historic events. For example, in Russia, as noted above, members of agricultural cooperatives often do not trust each other, while in Europe, increasing globalization of
the food system fusions agricultural cooperatives [27]. However, apart from the differences, there are many similar problems: poor rural infrastructure vs. urban agglomerations, insufficient awareness of agrarians, not always balanced public support. Therefore, the comprehensive approach proposed by the authors will work as a tool only if development of rural cooperation is systemic.

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