Economic Viability of the Specialized Agricultural Micro-enterprises in the Altai Krai

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Abstract. Recently, there was a decline in the specific production of agricultural enterprises, which creates certain production and financial risks. This study examines the degree of financial dependency of micro-enterprises of the Altai Krai, taking into account the differences existing in the extent of their specialization and the proportion of various branches of production. The authors analyzed the financial status of agricultural holdings located in the Altai Krai. They were arranged into 30 production categories. The findings demonstrated that horticultural enterprises specializing in sugar beet, sunflower, and grain farming were the most resilient to market fluctuations. However, such specialization led to overproduction and high price volatility. Moreover, monoculture farming showed a violation of the crop rotation system and deterioration of the soil condition, which hinders economic growth. The authors rely on the economic statistical method. Enterprises were categorized based on the statistical analysis conducted by the authors, considering the degree of specialization and the combination of industries, which allowed to identify the main tendencies in the discussed field.

Keywords: Solvency · Economic growth · Specialization · Agriculture · Development prospects · Bankruptcy · Altai Krai

1. Introduction

In agriculture, small business is represented by agricultural producers with 15–100 employees and total annual revenues from all types of activities and tax systems of no more than 800 million rubles. According to our calculations, in 2016–2018, only around 27.5%–30.1% of all agricultural enterprises reporting to the Ministry of Agriculture were medium-sized. Most of the holdings (54.84%–56.65%) were micro-enterprises with less than 15 workers and with an income of up to 120 million rubles. Of those, 72.4%–73.2% were limited liability companies (LLC), 14.7%–15.2% were peasant (farm) households or private enterprises, 8.8%–11.4% were agricultural cooperatives, and 1.4%–1.5% were joint-stock companies (JSC).

Compared to similar entities in other areas, a small business in agriculture has both advantages and disadvantages. Specialization and concentration of production and the combination of industries are becoming the main factors determining the competitiveness of agricultural micro-enterprises. A. V. Ulezko and N. G. Nechaev connected the growth prospects of small agricultural businesses directly to the operation size and resource availability. The prospects for further development of big agricultural holdings depend on combining different production branches and the optimal proportion of available resources for production [7]. This point of view is shared by I. N. Sycheva and O. Yu. Voronkova [6],
G. M. Gritsenko [3], and other Russian scholars. The issue of the optimal specialization of small and medium-scale agricultural enterprises is also relevant in other countries. The study conducted by N. Browne showed that diversified farming enterprises might be more competitive in Australia [1]. Z. Lerman and C. Parliament noted that large-scale dairy farming cooperatives were more robust and effective than the small businesses in that field. Moreover, large-scale operations showed an improvement in the debt-to-equity ratio [4]. The intricacies of researching the specialization and diversification in agriculture were also noted by K. Roest, P. Ferrari, and K. Knickel [5].

2. Materials and Methods

This research’s theoretical and methodological framework is based on the secondary literature on the problems of agricultural producers in Russia and its regions and the financial status of small and medium-scale enterprises.

The analytical categorization of agricultural enterprises was based on the information on income from sales of the core crop and livestock products (form No. 9 “The production and prime cost of crops,” form No. 13 “The production and prime cost of animal products”) contained in the annual (financial) statements of agricultural organizations. The economic viability was calculated by finding the net profit from the sales of agricultural goods as a percentage of the cost of goods sold.

The indicator “Loan capital in sales, %” was determined by dividing the sum of enterprise’s short- and long-term debt obligations (found in the rows 1400 and 1500 of the accounting balance-sheet) by the income from core production (row 2110 of the income statement).

The financial status of agricultural holdings was measured using the procedure approved by the decree “On the implementation of the Federal Act “On Financial Rehabilitation of Agricultural Producers”” (January 30, 2003 No. 52) [2]. The study used general scientific and special methods (comparative, monographic, balancing, normative, and economic statistical methods). The statistical data were analyzed using the Microsoft Office software package, including the analysis package.

The statistical data was provided by the Federal State Statistics Service (Rosstat), its territorial bodies, and the Ministry of Agriculture of the Altai Krai. The information on the financial and economic activity of the agricultural enterprises was provided by the online media service “SPARK,” the informational system “Rusprofile.ru,” and the online media service “Corporate Information Disclosure Center.”

3. Results

To determine the solvency ratio of agricultural micro-enterprises in the Altai Krai, they were grouped by 30 groups depending on the production type. Furthermore, the core specializations and production branch combinations were outlined. From 2016 to 2018, out of 404–464 micro-enterprises:

- 63.4%–75.9% specialized in grain;
- 4.7%–9.2% specialized in oilseed farming (sunflower for oil pressing);
- 4.2%–5.1% specialized in meat;
- 1.7%–2.4% specialized in dairy production.

Only 1.4%–4.7% of the holdings combined two branches of agricultural production, 0.2%–0.5% combined three, and 3.3%–4.7% had four or more core production branches.

In 2016, the most profitable enterprises specialized in sugar beet farming (102.1%), grain farming (17.0%–52.4%), potato/vegetable farming (28.1%–47.0%), and sunflower oilseed farming (19.8%–42.8%). The combination of several production branches limited the enterprises’ profitability, except grain-dairy, grain-oilseed, and oilseed-grain production. Apiary enterprises were non-viable commercially, as they covered only 90.6%–97.1% of the expenses (table 1).

In 2017, the most profitable types of production were potato and vegetable farming (28.1%), pig farming (20.0%), sunflower farming (19.8%), and grain farming (17.0%). A sharp decrease in grain production profitability is connected mainly to the lower prices on buckwheat, which is the primary grain crop in the south-east territories of the region. In 2018, there were no substantial changes in profitability except for a dramatic decrease in the economic viability of dairy farming (total return on
cost reduced from 97.3% to 88.8%), compared to the relatively high profitability of the cattle enterprises (32.57%). Apiary enterprises started operating at a profit for the first time in the period of 2016–2018.

Table 1. The economic viability of small agricultural enterprises in the Altai Krai by the production type, %.

| Core production branches | Production type          | Percentage to the total number of enterprises, % | The economic viability of the production, % |
|-------------------------|--------------------------|-------------------------------------------------|-----------------------------------------------|
|                         |                          | 2016  | 2017  | 2018  | 2016  | 2017  | 2018  |
| One (more than 50.0% of revenue) | dairy | 2.06  | 2.35  | 1.73  | 16.03 | -2.27 | -11.17 |
|                         | grain | 75.92 | 66.59 | 63.37 | 52.40 | 17.01 | 17.26  |
|                         | vegetables, potatoes     | 1.83  | 1.88  | 1.98  | 46.99 | 28.06 | 11.81  |
|                         | sunflower oilseeds       | 7.11  | 9.18  | 4.70  | 42.83 | 19.83 | 33.33  |
|                         | honey                    | 1.61  | 0.94  | 0.74  | -9.37 | -2.86 | 14.53  |
|                         | cattle meat              | 5.05  | 4.47  | 4.21  | 12.48 | 8.96  | 32.57  |
|                         | poultry, eggs            | 0.23  | 0.24  | 0.25  | 19.61 | 7.69  | 10.17  |
|                         | pork                     | 0.92  | 0.71  | 0.25  | 20.46 | 19.99 | 10.17  |
|                         | sugar beet               | 0.23  | 0.25  | 0.25  | 102.07| -     | 41.56  |
|                         | misc.                    | 3.21  | 2.59  | 3.22  | 66.75 | 0.81  | 3.88   |
| Two (33.3%–50.0% of revenue) | cattle meat, dairy      | -     | 0.24  | 0.50  | -     | 15.21 | -8.60  |
|                         | grain, milk              | 0.23  | -     | -     | 44.70 | -     | -      |
|                         | cattle meat, grain       | -     | 0.24  | -     | -     | 3.07  | -      |
|                         | grain, sunflower oilseed | 0.46  | 0.24  | 0.74  | -1.01 | 28.03 | 41.21  |
|                         | grain, cattle meat       | 0.46  | -     | -     | 6.74  | -     | -      |
|                         | sunflower oilseed, grain | -     | 0.24  | 0.74  | -     | 106.02| 18.96  |
|                         | misc.                    | 0.46  | 0.47  | 2.48  | -1.70 | 13.68 | 13.72  |
| Three (25.1%–50.0% of revenue) | grain, dairy, sunflower oilseed | 0.23  | 0.24  | -     | 42.24 | 30.92 | -      |
| No specialization       | -                        | 3.29  | 4.70  | -     | 18.05 | 16.30 |

Source: Calculated by the authors.

In 2016, further specialization in the production of grain or sunflower oilseeds increased the financial status of agricultural holdings. Companies with a standard financial status (2nd solvency class) prevailed in highly specialized micro-enterprises. The profitability of the enterprises that combined grain farming with dairy farming or cattle farming did not decrease (2nd solvency class) due to the favorable agricultural price in 2016–2017. All types of animal farming enterprises showed a high degree of debt – loaned capital exceeded the annual income 1.2–7.8 times (table 2). In 2017–2018, the financial well-being of the micro-enterprises increased. The companies with a high degree of solvency (1st and 2nd solvency class) were prevalent. However, pig and dairy farming enterprises and holdings with no specialization faced financial difficulties (4th solvency class).

Table 2. Credit capacity of micro-enterprises in the Altai Krai with different combinations of industries.

| Core production branches | Percentage of income, % | Loan capital in sales, % | Solvency class |
|-------------------------|-------------------------|--------------------------|----------------|
| Grain                   | 45.68                   | 66.80                    | 63.67          | 45.68 | 66.80 | 63.67 |
| Sunflower oilseed       | 36.05                   | 49.49                    | 26.78          | 36.05 | 49.49 | 26.78 |
| Cattle meat             | More than 50.0          | 244.36                   | 135.06         | 77.32 | 4     | 3     |
| Pork                    | 779.27                  | 525.01                   | 651.13         | 779.27| 525.01| 651.13|
| Dairy                   | 118.93                  | 123.39                   | 200.99         | 118.93| 123.39| 200.99|
rural areas, prerequisites for agricultural consumer cooperation development in the Altai region

Thus, relatively high profitability of production in micro-enterprises with seasonal demand for personnel and low wages predetermines an imbalance in the labor market. The tension in the labor market with the low financial interest of small businesses in the social development of the village creates prerequisites for migration to larger settlements or cities. The risks to the sustainable development of rural areas are also increasing.

4. Discussion

Intensifying the specialization in grain farming and expanding the tillage to the permitted agronomic limit allowed for more extensive and effective use of production resources. However, the increase in economic viability did not lead to a higher level of social performance. The analysis of the production specialization of micro-enterprises showed a seasonal demand for the workforce and the inability to provide year-round employment and stable income. In 2016–2018, the average salary of the micro-enterprises’ employees was 1.4–1.6 times lower than the industry average, even though the wage and salary funds in 2016, including insurance payments, did not exceed 16.2% of the gross income and 10.1% of the revenue. An increase in the remuneration of the employees to the average in the region would raise the proportion of the wage and salary fund by 12.4% in the gross income and by 7.8% in the revenue. In 2017–2018, there were no reserves to add to the salary fund. On average, it exceeded 83.3% of the gross income and 56.7% of the revenue, meaning that raising the average region salary was impossible.

5. Conclusion

Thus, relatively high profitability of production in micro-enterprises with seasonal demand for personnel and low wages predetermines an imbalance in the labor market. The tension in the labor market with the low financial interest of small businesses in the social development of the village creates prerequisites for migration to larger settlements or cities. The risks to the sustainable development of rural areas are also increasing.

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