Relationship of the dairy industry with processing

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Abstract. Relationships between the dairy cattle breeding industry with processing enterprises are considered. The paper analyzes the dynamics of prices. The interrelation of prices in the production of milk between the participants of the production technological chain is presented in the form of a “vicious circle” of price increases. The resolution of the price problem is possible due to the innovative development and production of dairy products with lower costs.

1. Introduction
Changes in production and economic relations between agricultural organizations and processing enterprises have undergone significant changes in the course of expanding their economic independence. Improving the relationship between agricultural producers and industrial enterprises for milk processing is an objective necessity.

2. Research Methods
We used economic-statistical, design-calculated research methods, a graphical method for presenting research results.

3. Research Results
Analysis of price dynamics (Figure 1) shows that price indices for milk producers are lower than consumer price indices for milk (3.3 p.p.). Moreover, the processing industry is in the grip of prices with different growth rates, which reduces its development potential, because costs grow constantly. Price index curves are polynomial. In the period from 2011 to 2015, raw milk price indices were higher than consumer prices for milk, but the sale of milk from agricultural producers was unprofitable from 2011 to 2013. In particular, the loss ratio was 0.1% in 2011, 3.4% in 2012, 2.6% in 2013. In 2014 and 2015, the sale of milk was low profitable, because the level of profitability was 9.6% and 6.4%, which is lower than the average bank percentage and limits the development of the industry. The results of own industrial processing in agricultural organizations are similar, the level of profitability (loss-making) from the sale of milk by agricultural organizations in a processed form is below by 0.1 p.p.-1 p.p.
Figure 1. Dynamics of milk price index for agricultural producers and consumer prices.

Based on the existing trends in price dynamics, the relationship between agricultural producers and processing enterprises is presented by us [1] in the form of a “vicious” circle of price increases (Figure 2).

Figure 2. “Vicious” circle of price increases in the production and processing of milk.

Being in the grip of prices, processing companies are trying to reduce costs, both through innovative development, the introduction of advanced technologies and production of products with lower costs, and by reducing production costs with existing technology, lower purchasing prices, technology violations. Processors reduce the purchase prices for raw milk, refuse to buy it from producers above certain levels. Agricultural producers of raw milk have to make concessions, because raw milk is a perishable product, its shelf life is limited.

A strong reduction in purchase prices leads to unprofitability of dairy cattle, reduction of the number of cows and curtailment of the production of raw milk. Reduction of milk production in
agricultural organizations further increases the shortage of raw milk in the market, intensifies competition among processors for raw materials, leads to higher prices and increased processing costs.

To increase capacity utilization, processors increase imports of milk powder and increase costs. Retail prices are rising, which reduces consumer demand for domestic dairy products in retail, making the market even more attractive for cheaper imported products [3, 4, 5, 6]. And the circle closes.

Our selective survey of managers, specialists and employees of agricultural and processing enterprises showed that the main difficulty in the transition to innovative technologies is a lack of funds, qualified personnel and low awareness of innovations.

The low level of marketability of milk produced and supplied for processing can to some extent be explained by the high proportion of milk production in households and the imperfect links between producers of raw materials and its processors.

To improve relations between producers of raw materials and processors, it is necessary:

− Creating affordable sales channels for small farms - the organization of consumer processing cooperatives, stationary milk receiving points from households;
− Deepening the integration process through the creation of associations with the system of cross-ownership of shares, ensuring the participation of subjects of integration in each other's governing bodies, as well as counter-shareholding.

The territorial agro-industrial association for the production, processing and sale of milk can be organized within the raw material zone of the dairy plant, bringing together agricultural organizations involving service organizations and financial and credit institutions. This formation can take on the full range of functions related to the purchase of milk, its processing and sale.

Figure 3. Scheme of integrated formation (association) for the production and processing of milk.

Interests of the participants of the integrated formation is realized through profit and profitability from joint activities. The mechanism of income distribution should take into account the peculiarities
of the technological processes of the participants of the integrated formation due to the different turnover of funds, the ratio of fixed and current assets, taxation, and other conditions.

Table 1. Realization of economic interest between enterprises of the dairy subcomplex.

| Areas of activity | Share in the total cost of 1 kg. | Share in the price of 1 kg. | Profit per 1 kg. | Profitability level, % |
|-------------------|---------------------------------|-----------------------------|------------------|-----------------------|
|                   | 2016                            |                              |                  |                       |
| Total             | 26,5                            | 100,0                        | 42,9             | 100,0                 | 16,4                  | 61,8                 |
| Agricultural enterprises | 13,3                            | 50,0                        | 15,0             | 35,0                 | 1,8                   | 13,2                 |
| Processing enterprise | 8,1                             | 30,7                        | 16,4             | 38,2                 | 8,3                   | 101,5                |
| Trade             | 5,1                             | 19,3                        | 11,5             | 26,8                 | 6,4                   | 124,4                |
| Total Project     | 29,9                            | 100,0                        | 48,4             | 100,0                 | 18,5                  | 61,9                 |
| Agricultural enterprises | 13,9                            | 46,4                        | 23,4             | 48,3                 | 9,5                   | 68,5                 |
| Processing enterprise | 9,8                             | 32,6                        | 16,4             | 33,9                 | 6,6                   | 67,9                 |
| Trade             | 6,3                             | 20,9                        | 8,6              | 17,8                 | 2,4                   | 38,0                 |

The table shows the distribution of cash proceeds depending on the contribution of each of the association members (table) according to the following proportions: 48.4% in agricultural organizations, 33.9% in processing enterprises, and 17.8% in trade enterprises.

4. Conclusions
The implementation of the proposed model of integrated formation (association) allows to solve the problem of relationships between organizations of various fields of activity involved in the production of milk and bring it to consumers.

References
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