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STATISTICAL ANALYSIS OF THE COMPETITIVENESS OF THE MAIN FOOD PRODUCTS OF THE KRASNODAR REGION

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The Krasnodar region is situated in the southnwestern part of the North Caucasus in the Russian Federation. The fortynfifth parallel divides the region into two approximately equal parts. European countries on the same parallel are Romania, Yugoslavia, Italy (northern part) and France (southern part).

The region has a considerable variety of soils. These have long been renowned for their high fertility and largely consist of black soils. The climate is mild/continental, and subntropical south of Tuapse. Average temperatures on the plain are n4EC in January and +23EC in July, the plains receiving annually between 400 and 600 millimetres of precipitation. The northnwest of the region is washed by the Azov Sea, and the southnwest by the Black Sea.

The Krasnodar region is commonly said to have the best natural and climatic conditions in Russia for farming, with some 4.6 million hectares of agricultural land, including 4.0 million hectares of arable land. It accounts for 2.2% of all agricultural land and 3% of arable land in the Russian Federation, and has an approximately 6% share in gross agricultural output.

The region grows more than 100 types of crops, the main ones accounting for a significant proportion of total harvests in the Russian Federation: grain n 10%, sugar beet n 25%, sunflower n 20%, fruit and berries n 15%, grapes n more than 50%, and rice n 70%.

The agronindustrial sector is the backbone of the region's economy, employing half of the working population. It comprises more than 700 agricultural enterprises, including over 500 jointnstock companies, partnerships, cooperatives and associations; more than 200 enterprises providing services to agriculture; and 23,000 private farms.

Agricultural output is processed by 300 large and mediumnsized enterprises of various forms of ownership: 10 are engaged in the production of fruit and vegetable preserves, 23 process meat, more than 40 produce dairy products, and the sugar industry has 16 factories. Many agricultural enterprises consider it advantageous to have subsidiary industrial plants for processing their agricultural produce.

Changes have occurred in the economy's agrarian sector with the development of market relations. The agrarian reforms have largely involved a change of approach to ownership of the means of production and the establishment of a diversified rural economy.

It has been assumed that, in a market system with a variety of forms of ownership and property rights guaranteed by law, no one can interfere by administrative means in the affairs of a proprietor and tell him what to produce, and to whom he should sell his produce and at what price. However, no real advances have been made in agricultural production. Overall output in 1997 was 2.1 times less than in 1990.

Changes in output of the main types of agricultural produce on farms of all categories are shown below:

	1997 thousand tonnes	1997 as % of 1986n90
Grain (weight after processing)	6 087	74
Sugar beet	3 534	59
Sunflower seeds	326	54
Vegetables	375	40
Fruit and berries	280	64
Grapes	160	62
Meat (slaughter weight)	204	35
Milk	1 128	57

The sharp reduction in output of the main types of agricultural produce over this period has led to a decrease in output from processing industries. The production of meat and preserves fell 3.5nfold, and that of fat cheese 2.3nfold, while production of animal oil decreased by 37%, sugar by 22% and vegetable oil by 20%.

Significant changes also occurred in the overall structure of agricultural production during the transitional period: the output share of collective agricultural enterprises fell to 67%, while there was an increase in the output share of holdings owned by the population (30%) and by private farmers (3%).

Private farmers for the most part have a weak material base, making it impossible for them to operate efficiently. They have more than 400,000 hectares of agricultural land, but with each farm having on average 19 hectares and only 0.3 tractors, i.e. some farmers have no material or technical resources at all. Under these conditions they cannot be expected to make any significant improvement in the competitiveness of their products.

The main reason for the sharp decrease in agricultural production and the output of food products is the disparity of prices.

The selling prices of agricultural produce in 1997 rose by 1,6000 times compared with 1991, whereas prices for industrial goods and services for agriculture rose by 7,400 times.

Let us look at the influence of the above price changes during the transitional period on the competitiveness of the main types of agricultural output and the food supply in the Krasnodar region.

Grain farming occupies a central place in the region's agronindustrial sector, constituting the foundation of all agricultural production. The area sown to grain crops on farms of all categories totals about 2 million hectares, representing more than half of the overall crop area. Grain yields in the region are twice the average for Russia as a whole.

The country's main grain crop is wheat. One tonne of wheat in every five is produced in the region, where winter wheat is sown on an area of more than 1 million hectares, i.e. 30% of the total arable area.

An analysis of the situation of grain farming shows that the region's agronindustrial sector depends to a considerable extent on the production of grain, and especially wheat. Grain is the most profitable crop and helps to support less economic or even lossnmaking crop production. However, the economic potential of grain farming has been declining with every year. Thus, whereas the profitability rate for grain was 220% in 1990, by 1996 it was only 48%.

The main reason is the disparity in the growth of prices. Wheat prices over the last six years rose by 2,400 times, whereas prices went up by 12,000 times for fuel and lubricants and agricultural machinery, by 26,000 times for electric power and by 7,000 times for fertilizers.

Today a farm needs to sell 174 tonnes of grain to acquire a DTn75 tractor and 660 tonnes for a DONn1500 combine harvester; 1,000 kWh of electric power costs as much as 260 kg of grain, and 1 tonne of petrol requires 2.2 tonnes.

This discrepancy in prices in the context of the seasonal nature of agricultural production and the lack of working capital has meant that the grain producer cannot ensure the timeliness and quality of the technical operations involved in cultivating grain crops. The increased expenditures on inputs are accompanied by a sharp reduction in wages, with the result that it is difficult to employ skilled operatives and there are consequently serious shortcomings in the use of crop production technology.

The region has about 17% of the land planted for **sugar beet** and a quarter of beet processing capacity in Russia. Sugar beet growing is one of the leading branches of the region's agronindustrial sector, accounting for about 5% of arable land and a fifth of the money income earned from crop production.

Sugar beet farmers are experiencing tough competition from sugar importers, who are operating under better conditions. The price of imported sugar, including transport costs, is US$ 340n360 per tonne, which limits the sugar prices of domestic producers to about 2n2.2 million roubles per tonne.

The effectiveness of sugar beet production thus depends on the relationship between the wholesale price and cost price of **sugar**. The largest component in the cost of sugar consists of expenditures on inputs. The high prices for fertilizers and pesticides have led to a considerable decrease in their use. The share of fertilizers and plant protection agents in the cost of sugar beet has been gradually decreasing because farms cannot afford these inputs. Farmers have been unable to apply proper cropping practices and the standard of farming has declined.

Wear and tear on equipment for sugar beet farming has sharply reduced the quality of the operations performed and contributed to failure to meet deadlines. The result has been a considerable reduction both in productivity and in the volume and quality of the beet crop.

The main reason for the high cost of production of sugar beet has, therefore, been the rise in the prices of fertilizers, plant protection chemicals, fuel and lubricants, this rise being many times higher than the rate of increase in the purchasing price of sugar beet.

It has been calculated that even using intensive methods of growing sugar beet with yields of 350 quintals per hectare, the profit level is only 6.6%.

The reduced output of sugar beet has led not only to a decline in sugar manufacturing, but also to a sharp deterioration in the financial situation of sugar factories. On average these are being supplied with only 64 per cent of the beet they need to operate in an optimal fashion.

As a result of the tough competition for raw materials among sugar factories in the region, there are some factories which have not been functioning for lack of supplies (Novopokrovsky sugar factory).

Sugar beet is now being processed widely through barter arrangements in order to improve the financial situation in the region.

The services of a factory processing beet supplied partly on this basis by agricultural enterprises are remunerated through an approximately 65:35% redistribution of profits between the producers and the processors, respectively.

The situation is now such that the direct [words missing] industrial processing enterprises. Thus, the profit level for sugar beet is currently 10n14%, and that for sugar is 32%.

The region has a climate and natural conditions which favour the cultivation of **oilnproducing crops**, as well as the industrial capacity to process 800,000 tonnes of this raw material. In addition, more than 100,000 tonnes are processed annually at 95 plants belonging to food and agricultural enterprises.

The technology used at the oilnprocessing enterprises is on a level with world standards. However, analysis shows that these enterprises will not be able to produce competitive goods to world standards unless they are suitably equipped with capacity for further oil processing (refining and deodorizing) and packing.

With the transition to market relations the areas planted for <u>sunflower</u> in the region have increased almost 1.5nfold to about 400,000 hectares. However, the failure to apply sound cropping techniques, especially as regards crop rotation and use of fertilizers and plant protection agents, and the generally lower standard of farming have inevitably led to smaller crop yields. Average yields of sunflower were 23.5 quintals/hectare in 1990, 17.5 quintals/hectare in 1995 and 8.4 quintals/hectare in 1997.

According to the AllnRussian Research Institute for OilnProducing Crops, new varieties of sunflower with potential yields of 35n40 quintals/hectare have been developed. Even allowing for essential outlays in the production process occasioned by the weather and organizational requirements, these varieties when grown with the recommended techniques, should give an average yield of around 25 quintals/hectare for the region as a whole. This is comparable to the performance of the best European countries growing such crops. FAO calculates that in recent years sunflower crops have on average yielded 21n22 quintals/hectare in France (on an area of 917,000 hectares), 23n26 quintals/hectare in Italy (131,000 hectares) and 18n21 quintals/hectare in Yugoslavia (185,000 hectares).

Thus, Krasnodar has the capacity to produce 1 million tonnes of sunflower annually with these scientific and technical developments (varieties, hybrids, techniques). However, the high prices for industrial goods and services have brought about a sharp increase in outlays for the production of sunflower, and the use of intensive techniques for growing the crop no longer makes economic sense.

The price of the raw material has a decisive influence on the wholesale price of oil (and consequently on its competitiveness), since the raw material accounts for 75n85% of the total cost of the oil. Given the present wholesale prices for oil in the domestic market (2.8n2.9 million roubles/tonne), competitive products can be made only from the cheapest raw material (820,000 roubles/tonne), and this is not economically viable for agricultural producers.

The region is one of Russia's main producers of **vegetables**. The principal vegetable crops are potatoes and green peas. These account for two thirds of the gross output of vegetables. The main user of the vegetables grown by agricultural producers is the canning industry, where 10 canning plants process half of the vegetables produced in the region.

The crop area, total harvests and yields have decreased severalnfold in recent years both at collective agricultural enterprises and on private farms. The main reasons are the unavailability of material and technical resources and lack of funding.

Private subsidiary holdings have become the main producers of vegetables in the region in recent years. [words missing] necessary protective measures, considerable reduction in the application of fertilizers, lack of demand for the produce grown, irregular accounting between producers and processors, impossibility of acquiring new machinery and equipment and the appearance of cheap imported vegetable produce (often of doubtful quality) on the Russian market.

An analysis of the cost structure of **tomatoes** grown by the region's agricultural enterprises shows that the main outlays are on wages, evidencing a low level of mechanization in the cultivation and harvesting of this crop. Routine maintenance costs and overhead expenses have both risen in recent years, owing to wear and tear on machinery and to the higher cost of road transport and considerably more expensive packaging.

The cost structure of **green peas** is quite different, the share of wages not being significant owing to the high level of mechanization of cultivation and harvesting. The main outlays are on seeds and plant protection agents.

An analysis of the cost structure of tomatoes and green peas in agricultural enterprises indicates that the selling price of these crops is relatively low and insufficient to provide an incentive for agricultural producers to grow them. Raising the yields of these crops may increase their profitability. However, the main consumer of the vegetables produced by the region's agricultural enterprises is the canning industry and techniques for their cultivation and harvesting are largely geared to canning, yet the cost of the finished product at canneries has been rising significantly, making it uncompetitive.

A cost analysis of tomato sauce and green peas shows that expenditures on the cans used for packaging is high, owing to a substantial increase in the price of tin. Overhead costs represent a large share of the total cost because of underutilization of production capacity and the high rates of interest for plant hire. In 1996 the capacity utilization rate in the region's canneries was 19 per cent. The VAT on canned vegetables (10 per cent) also adds considerably to the cost of the final product.

The region's climate and soil conditions are most favourable for the production of the best varieties of **seeded** or **stone fruit**, **nut plants** and even **subtropical crops**.

Horticulture is practised on 347 collective holdings, which have more than 50,000 hectares of orchards; those owned by 500 private farmers constitute 460 hectares.

Fruit growing in the region in recent years has become unprofitable except on holdings where the level of specialization is above 65 per cent. An analysis of the cost of production and pattern of expenditures on such holdings shows that wages and other wage costs, depreciation, plant protection agents, overheads and miscellaneous costs are the main components.

The cost of production and transfer price of fruit and berries on specialized holdings have on average been as follows over the last three years:

(thousand roubles/tonne)

	Seeded fruit	Stone fruit	Berry fields
Cost of production	1 530	2 740	4 035
Farm transfer price	1 800	3 000	5 000
European price	3 360	5 600	17 800

The rate of recoupment of expenditures on material and technical resources in fruit growing can be seen from the quantity of fruit needed to pay for each unit of resources. Thus, the agricultural producer needs to sell 125 tonnes of fruit to obtain a MTZn80 tractor, 1.8 tonnes for 1 tonne of An76 petrol, 1.6 tonnes for 1 tonne of diesel fuel, 1.2 tonnes for 1 tonne of fertilizer and 290 tonnes for 1 tonne of plant protection agents.

The largest components of the cost of canned produce are raw materials and supplies (up to 70%), and energy costs and depreciation are also significant.

It has been calculated that, even under such conditions, ATetra Pack@ fruit juices and preserved fruit for children in small packagings may be competitive where production totals at least 26 million standard tins: the prices are lower than European prices and the products are of a higher quality.

The region's environmental and natural conditions facilitate the production of **table grapes and industrial varieties** which ripen at different times and are of good quality.

Grapes are grown mainly in the Anapontamanskaya, Chernomorskaya and Yuzhnonpredgornaya regions, which account for up to 85% of all vineyards. The climatic conditions in these areas enable grapes to be grown without being covered for winter, thus making the industry less resource intensive.

Grapes are grown by 51 agricultural firms and more than 100 private farms.

In recent years the areas used for vineyards and gross yields have been clearly in decline and the economic base of the industry had been undermined. Lack of funding and high interest rates on loans are forcing the specialized processing firms to operate under barter arrangements, whereby the wineries pay the suppliers of the raw material in finished products, mainly viticultural materials.

The region's main vineyards are located on soils with low fertility. Higher output can therefore be achieved only by increasing direct outlays on mineral and organic fertilizers. It can be seen from the cost structure of grapes, however, that the share of fertilizers amounts to only 3%, i.e. fertilizers are hardly used.

The cost of protecting 1 hectare of vineyard with effective imported crop protection agents ranges from 120 to 220 dollars. There are no domestically produced agents except for sulphur and copper sulphate, insufficient funds are available to obtain environmentally sound preparations and therefore costs under this heading are also very low, at only 13%, while the cost of depreciation represents a quarter of all costs and about a third of expenditures are on road transport, the machinery and tractor pool, maintenance of equipment for applying agricultural chemicals, etc.

The efficiency of grape production cannot be considered without reference to the prevailing prices for the final products n materials for wine production and wines.

Under the present arrangements with processing enterprises, wine producers do not make a profit from the produce grown, their revenue coming from the quantity of wine sold and from the proceeds returned to them. Each decalitre of materials for wine production worth 23,600 roubles is subject to 32,500 roubles in levies (excise duties, VAT and licensing fees). The high taxes mean a high price for winenmaking materials, and growers are forced to sell their produce for a minimal return.

The bulk of wines, especially champagne, are shipped out of the region. In 1996 the Krasnodar region supplied 4 million decalitres of champagnenmaking materials, enough to fill 53 million bottles of champagne. However, the region produced only 5 million bottles, the remainder being filled elsewhere, and this does not provide the region with the resources needed to develop the industry.

Krasnodar obviously has to develop its wine market and build up its own infrastructure for manufacturing bottles, corks, packaging and labels to presentnday standards, enabling the products to compete with foreign beverages entering the market.

All the region's agricultural enterprises supplying **dairy products** made a loss in 1996 (n20.1%). Milk yields fell to 2,745 kilograms per cow. The dairy industry bought milk from farms at 1,200 roubles per litre.

It has been calculated that for the profit level of milk to be at least 25%, the recommended farm selling price per litre must be:

Yield of 3,000 n at least 2,300 roubles
Yield of 4,000 n at least 2,000 roubles
Yield of 5,000 n at least 1,800 roubles

The world price is currently equal to 1,933 roubles per litre for milk with a basic fat content of 3.6%.

If the purchase price in the region is equivalent to the world price, therefore, milk will be competitive if output per cow is between 4,000 and 5,000 litres. However, agricultural enterprises are currently selling milk at 38% below world prices. It is perfectly clear that dairy production needs financial support and may founder unless this is provided.

The situation is no better on private farms. Optimum dairy production would require farms to invest at least 700 million roubles in a range of equipment, a cowshed and replacement livestock. This is too much for the private farmer under present conditions. The only conclusion to be drawn is that to provide private farmers with the incentive to engage in dairy production they need to be granted loans at concessional rates of 8n10% per annum.

While the actual producers of milk (agricultural enterprises) make a loss from the sale of milk, the dairy industry and trade network earn a certain profit. This is clear from the following figures relating to the Kurganinsky dairy plant.

The cost of 1 kg of privately produced butter, at a milk purchase price of 1,200 roubles, is 19,500 roubles, and the plant's wholesale/transfer price is 22,000 roubles. The retail price is 25,000 roubles. Even at this price butter will be uncompetitive compared with foreign produce.

Given the present situation it is necessary, in our view, to protect domestic producers from an invasion of imported food products, to place orders for milk and dairy products for State reserves, and to set guaranteed prices and ensure that at least 70% of milk is purchased at those prices, as is the practice in European countries and the United States. In this connection, the necessary budgetary resources should be made available at both federal and regional levels.

Production of **meat** of all kinds by agricultural enterprises is a lossnmaking activity (n35.3% in 1996). The largest component in the cost of production is, of course, fodder, and especially combined feed. The high cost of feed together with the cost of energy, spare parts and maintenance have increased the outlays for the production of beef, pork and poultry meat.

Meat is being produced at a loss because of the extremely low purchase prices. In 1996, for example, the selling price of beef was 427,000 roubles per tonne, or 374,000 roubles for the industrial units growing and fattening the cattle, and this is 65n70% below world prices.

Given the present disparity of prices for industrial goods and services relative to agricultural produce, meat and meat products are becoming uncompetitive.

An analysis of changes in prices, costs and profits shows that the absolute majority of agricultural and food products in the Krasnodar region are lossnmaking. They are therefore unable to compete with similar foreign products.

The main reason for this situation in the region's agronindustrial sector is the disparity of prices for agricultural and industrial products, and especially the rising cost of energy. Energy prices are growing dozens of times faster than the prices of agricultural products, and represent half or even more of current costs and embodied labour in the total cost of production.

For the region's agricultural producers it has ceased to be costneffective to apply fertilizers and crop protection chemicals, to employ new agricultural equipment and to pay for transport services.

The main reasons for this situation obviously also include the failure by the State to provide timely and full support for agricultural producers, high rates of refinancing by Russia's Central Bank, high taxes and a sharp decline in investment.

With a view to radically improving the economic situation of agricultural enterprises and ensuring the competitiveness of products it is essential, in our view, first of all to create the economic prerequisites for overcoming the crisis and developing agricultural production further. This means:

Establishing appropriate State control and regulation of prices for the main types of material and technical resources, and especially energy;

Reviewing the present credit and financial policies, envisaging concessional loans for agricultural producers;

Setting a firm quota for supplies of agricultural produce to State reserves and guaranteed purchase prices allowing the goods produced to be marketed;

Changing the tax policy and introducing an appropriate system of State subsidies for agriculture;

Dealing with the problem of protecting domestic producers from foreign food imports;

Taking measures to eliminate the monopoly of processing enterprises and to reduce the tariffs for rail transport of agricultural produce and foodstuffs.

A set of statistical indicators characterizing the effectiveness of agricultural production, costs, changes in prices and price formation, the composition, quality and exports and imports of products, as well as the formation of a competitive environment, is of particular importance for analysing the competitiveness of food products during the period of transition to market relations. Many of these indicators call for estimates of future trends.

Under presentnday conditions it appears necessary to explore further and make greater use of effective methods of statistical observation, as employed in developed marketneconomy countries which previously found themselves in a similar situation as regards the output and competitiveness of products.

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