AGRICULTURAL TRADE IN EXAMPLE OF MILK FROM PERSPECTIVE OF MULTI-CRITERIA ANALYSIS

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Abstract. At present the topic of the commodity item "Milk and dairy products" becomes more urgent. It is not only a business area in the national level ensuring self-sufficiency of domestic market and sales in the territory of the Czech Republic, but it means also a topic that influences on great deal the whole agrarian foreign trade of the Czech Republic and in the result has an impact on the total balance of foreign trade. The aim of the present study is to work out a proposal of measurement for individual market participants and to find out the business opportunities on the selected world markets and assess the current location of the commodity item "Milk and dairy products" in the field of agrarian foreign trade of the Czech Republic. Based on a detailed analysis it was found that the production base for the commodity "Milk and dairy products" can originate in a wide range of alternative primary producers from small producers to high capacity cowsheds. The success of the commodity item "Milk and dairy products" is a function of complex endogenous and exogenous linkages derived from the regional position and from the product verticals in individual terms of common and legislative environment.

Keywords: milk and dairy products, individual market, milk producers, stochastic model, agrarian foreign trade.

Introduction

At the time of global economic crisis, the financial crisis that began in 2008 and is expected by economists and financiers to be the world's only after its culminating in mitigation, it is important to focus on monitoring the development of the basic commodity of trade items. [1; 2] The present study analyzes the trade of the commodity item "Milk and dairy products". One of the reasons why this issue is addressed on a detailed level is the above current situation and to clarify the situation, which may be due to the amount of information that is presented to companies, largely unclear. Whether it is general information or information professional and knowledgeable, the general public question of the current situation in the national and foreign markets [3]. It is possible to meet a number of views, based on the economic results, which reached the industry before 1989, when czech position in this area was stable and steadfast, in terms of the production and the commodity items "Milk and milk products" prepared and the related realization of the system of partial levels of the market operators to produce vertical - from primary producers, processors, and producers over consumers, but also rooted in the tradition of individual products, which were very characteristic for the national market, to trust in the quality and value of products from domestic sources [4].

The commodity "Milk and milk products" includes any discussion of the key elements of the stability of agricultural systems and agrarian-food complex [5]. This claim is based on the schedule that the cow as a source of calves at the same time ensure their reproduction, they are also the basis for fattening bulls are the producers:

- milk
- manure, as well as other categories of cattle, which are the foundation
- meat of culled dairy cows.

As polygastric animals convert the energy contained mainly in the form of polysaccharides, whether solid green feed, silage, hay, air-dried goods and their derivatives or other concentrated feed grains based on food-oriented forms of dairy and meat type, as one of the fundamental sources of nutrition for human population [6].

Based on a detailed analysis it was found that the production base for the commodity "Milk and dairy products" can arise from a wide range of alternative primary producers from small producers to big cow-sheds with a concentration of several hundred cows [7]. This is a clear differentiation for different states. The indisputable fact remains that the success of commodities is a function of a number of endogenous and exogenous complex relationships, based on the position of the region and product verticals in the normal individual conditions and the general area of significant economic and legal ties of a wider type, mainly agrarian policy [8].

Materials and methods

For quantitative analysis of the behavior of product verticals and output of products, which are tradable commodities, several basic approaches can be objectively used [9]. These approaches are based on the mathematically oriented formalization, economic and mathematical display and quantification of the basic manufacturing processes and a system of economic ties, including the application of the commodity structure of the market, i.e., marketability [10].

On the basis of a series of experiments a combination of several basic approaches was chosen that in a sufficiently objective-oriented degree may submit an explanation of the basic quality of a hypothetical approach to the problem. Four quantitatively oriented approaches were applied.

1. The use of statistical models for analyzing time series of the basic quantitative parameters of the examined issues such as the basic underlying sources of the quantitative parameters
2. The data obtained from the observed time series were quantitatively formulated into 3-quadratics econometric model using a stochastic variable, which was solved based on the regression model to the desired level of reliability. Note: This model was designed based on the hypothesis adopted 3-quadratics links between declarative variables and explanatory Y1 to Yk, the logic of which was developed as a combination of tables and diagrams illustrating the functionality of the relationship between the selected variables of the model types
3. With respect to passing the initial idea of the functionality of the various factors involved positions in the schematic of the problem were processed kind – economic links between the elements that are involved directly in the formation of milk production in the system concept, i. e., the relationship between categories within the cattle and their input factors.
4. The comparative quantitative approach, based on the principles of the synthesis of partial results and their mutual comparison was used to formulate conclusions and generalizations, as the cognitive approach to the analysis examined the issue as one of the possible methodological variations.

Also this parameter is included in the synthetic data average realized price for milk in the Czech Republic, which serves as the basis for subsequent quantitative analysis based on the research questions [11].

To assess the issue as a whole a complex analytical model based on econometric appears, which is transformed in a matrix form displays a set of relevant links between the studied parameters in refine form of time series using the random potential for defining the share, i.e, stochastic influences.

Results and discussion

With regard to the need for a systemic exact form and quantification of the problem, to check the own conclusions of three basic structures – an equation econometric model was used. Due to the issue of marketability of milk three independent variables Y1, Y2 and Y3 were selected, which are defined as follows:

Y1 = market price of milk

Y2 = market rate application

Y3 = time-determined level of profitability of milk production.

For the purpose of quantifying the system as a whole with regard to the available quantitative variables, explanatory variables x1 to x13 were chosen, which are defined as follows:

x1 = number of cows

x2 = average net milk production per cow (performance)

x3 = basic exercise price of milk

x4 = average per capita milk consumption in the CR

x5 = import to the CR

x6 = export

x7 = production of milk powder

x8 = exports of milk powder

x9 = market price of milk powder

x10 = quotations of production constraints of the EU

x11 = exogenous milk powder output (i.e., export to third countries)

x12 = world price of milk powder

x13 = production cost of milk production.

Variable x14 (U) residues as a class, it was necessary to explain the chosen values of the explanatory variables as the rate for synthetic random effects. The 3-equational model was developed on the basis of the selected structured hypotheses of possible functional relationships in Figure 1.

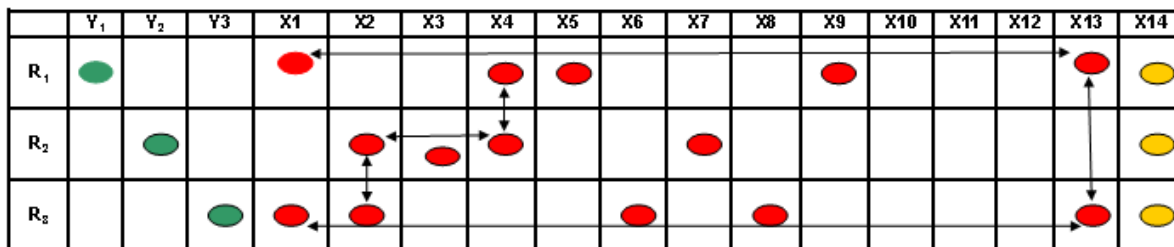GRAPHICAL INTERPRETATION OF HYPOTHESIS

Fig. 1. **Graphic interpretation of hypotheses structure**

For each equation calculations were performed in a sequence of functional transformation using the inverse relationship of the functional relationships between the variables, such as transposition search form functional derivatives of the inverse model.

Conclusions

The agrarian foreign trade deserves a great deal of attention mainly export of this commodity to the individual markets, which comes from the fact that the relative share of the commodity item "Milk and milk products' market, respectively, the agrarian foreign trade of the Czech Republic, occupies in exports on average 16.74 %, which is the strongest item.

You must create the conditions for domestic processors to export agricultural items not subject to a lower price level, which plays an important role in the purchase of commodities, such as processors for German producers and interest in domestic products to foreign markets. It should be given to relevant issues at the domestic level to ensure continuous sales and a strong position in a situation where there is increase in the cost of raw materials or products intended for export. In the area of focus on the selected sub-markets within the European Union mainly foreign trade links with markets in Germany, Poland and Slovakia are dominated. You must set the conditions for domestic sub-entities of the Czech market so that each level of production, production and trade possibilities were comparable to those of foreign markets or the Union.

The main barrier to the entry to the commercial commodity "Milk and dairy products" is primarily the financial demands of such a step, which results mainly from the high demands on the production technology and production. An opportunity for an established and strategically strong Czech actors were primarily entry to the EU, where they could make attractive offers to foreign partners, which is Czech goods of comparable quality to foreign goods, with more acceptable prices than those offered by the local merchants. In addition to and cost effectiveness is needed – as mentioned above – to take into account the effects of competition no longer functioning, as well as legislative and regulatory developments which were to be met before the EU and which in themselves provide a standard Union.

A stable position of our exporters and producers can ensure long-term expansion of the area especially at the economic and technological level.

The technological area, which is reflected primarily in the quality of the supplied raw materials and products, is the fulfillment of the quality standards, which are secured by modern technological methods for each level of production and processing and control system. Economic efficiency is

mainly in resolving supplier-customer relationships between the individual producer levels, stabilization of the price of milk is reflected in a significant level of exports. As effective as the results appear to the level decreasing below 15 %.

This stability must be supported by other activities not only in the economic sphere to ensure productivity, monitoring and improving economic indicators, as well as in management and employee development, the design team management, but also for the systematic development of suppliers, especially in the settlement of participation in profit as the effects of vertical product whole.

A wide range of know-how, a stable production schedule, technological competence and independence (competence), human resources management, monitoring and control costs, focus on the process quality and customer, financial management and strategic thinking have resulted in the creation of competitive advantage and added value .

The result of partial steps and areas of economic value added in the form of continuous improvement of the economic value of the company resulting from the execution of annual financial plans and support links between the producer and customer, using an external customer.

Based on these steps and measures the position of Czech entities in foreign markets and the possibility of expansion and expansion into other world markets are very good. This situation is based mainly on the basis of partial support organizations to ensure stability and above all it even better. These steps are based on other possible investments in the expansion, maintenance, modernization and technological innovation, security and amenities. An important component of activities of individual entities is anchored and trends, and maintaining control of quality and product quality, hygiene standards and of course, close cooperation between the sectors of trade and legislation.

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