

PAPER • OPEN ACCESS

The assessment of the economic agents' competitive interactions in the regulation of food market development

To cite this article: L V Yushkova *et al* 2019 *IOP Conf. Ser.: Earth Environ. Sci.* **315** 022064

View the [article online](#) for updates and enhancements.

The assessment of the economic agents' competitive interactions in the regulation of food market development

L V Yushkova^{1,2}, A A Stupina^{1,2,3}, Zh N Shmeleva², R I Kuzmich¹ and O I Antamoshkina^{1,2}

¹ Siberian Federal University, Svobodnii, 79, Krasnoyarsk, 660049, Russian Federation

² Krasnoyarsk State Agrarian University, Mira Avenue, 90, Krasnoyarsk, 660041, Russian Federation

³ Reshetnev Siberian State University of Science and Technology, Krasnoyarskii rabochii, 31, Krasnoyarsk, 660037, Russian Federation

E-mail: h677hm@gmail.com

Abstract. The article is devoted to assessing the impact of competitive interactions of economic agents on the regulation of the development of food markets. Consideration of the problems of the formation and food market development in terms of competitive relations provides a theoretical and methodological basis for improving the interaction mechanisms between economic agents in order to achieve the desired quality of the population life and sustainable development of the territory, and its goals can be interpreted not only from the point of balancing view the use of natural resources, scientific and technological development, personal development in order to strengthen the capacity to satisfy human needs in terms of preventing threats to future development.

Improving the efficiency of the food market development requires taking into account the mutual influence and determining the boundaries of the interaction of the market economic agents demonstrating in modern conditions other formats of competitive relations, manifested in the territorial and network business organizations, in mutual collective responsibility for the economic entities actions, parity relations with the buyer and government agencies. All this has caused the relevance of determining the integration effects of competitive interactions of food product market participants in the Krasnoyarsk territory in the context of the developed and proposed processes of competitive relation element regulation.

The issues of competitive interactions of economic agents were critically considered by foreign scientists: I. Ansoff (1979), J. Bain (1930), D. Ross (1999), M. Porter (1990), J. Tirole (1996) and thus allowed them to develop the theory; as well as by domestic scientists and economists: Azoev G.L. (1995-2000), Belyakova G.Ya. (2001), Voronov A.A. (2005), Kalyuzhnova N.Ya. (2005-2010), Rozanova N. M. (2000), Rubin Yu. B. (2010), Untura G.A. (2000), Shastitko A. E. (1995), Yudanov A.Yu. (1997-2000). The institutional nature of competitive relations in the food market is substantiated by the authors from the standpoint of the philosophy of science and economic theory and aims at combining the ontological approach to the theory of competitiveness and the competitive theories genesis, the cognition of the competition laws in the creative economy, the connection of the structural (Harvard paradigm) and action [1-2] schools to the competition role consideration.



The main result of economic agents' competitive interactions is the dynamic effective development of the food product market as a complex socio-economic system that creates and multiplies the advantages of each and all participants in competitive relations. In the context of this issue, it should be noted that the greatest effects, in our opinion, should be concentrated in the sphere of the competitive status formation, synthesizing all the elements of competitive relations and thus ensuring the rational and fastest possible mobilization of all types of resources in the food market in:

- improving the quality of life in the region and thereby increasing the level of labor potential;
- increment of investment resources in the field of trade in food products and agro-industrial complex sectors;
- stable growth of tax and non-tax revenues in the regional budget;
- increasing the attractiveness of the territory as a place of comfortable living and activity, tourism and travel;
- effective use of public budget funds;
- solving environmental and resource problems of territories;
- stimulation of investment activity of business structures in the region;
- savings on subsidies in the production of food products and guarantees for their sale by retail chains;
- transparent allocation of public funds in the process of public purchases.

Competitive relations between economic agents are a form of competition manifestation; they demonstrate the interaction about the provision of agents' advantages in economic competition, the stability of such a situation, which determines the prerequisites for obtaining the greatest resource results, the balance of these resources and the prospects for the development of economic agents. Competitive relations are the results of rival parties' interactions arising in the conditions of limited resources and limited access to them, and such interactions are of a conflict nature, since they pursue the goals of outstripping and/or weakening the existing competitors [3-5]. Nevertheless, due to the similarity of all rivals' goals, competitive relations are often represented by temporary competitive unions and alliances, especially if one has to confront the strongest opponent.

In the definition of the "competitive relations" category, the logic and completeness of the interpretation of A. Sh. Khasanova should be noted [6], but we emphasize that, despite the prevalence of the term, the vast majority of scientists do not speak and do not give their judgments in this regard, appealing only to the links of competitive relations and competition. "The interrelated sides of the activities exchange in the economy are the relations of rivalry and cooperation of producers... Competition, as A. Sh. Khasanova (2002) notes is a special historical type of relations in which the interaction of economic entities is manifested directly as a personal private rivalry and indirectly – in the form of social dependence that characterizes cooperation". Thus, the author's position in the interpretation of competitive relations is to determine the forms of action/inaction of the economic agents' behavior in the process of competition.

The dynamics of competitive relations in the food product market and, accordingly, the relevance of their research are due to a number of reasons, the most significant of which are presented by:

- complexity of the relationships between economic agents;
- dependence of the business conditions that exist in the food market on the behavior of its separate managing subjects and interests of other economic agents;
- strengthening of the role of government regulators in food trade;
- transformation of the largest investors' interests in the sphere of trade in food products and their oligopoly relations;
- changes in the areas of competition between entrepreneurs due to the increase in the share of transaction costs as opposed to production costs;

- growth of information needs and trends of digitalization in the economy in general and in the food markets in particular.

The analysis of the integration effects of competitive interactions does not seem to us to be a complete assessment without their economic component, consequently the sensitivity diagnosis of the competitive status components was carried out and the solution of the reverse optimization task [7-8] was applied to the problem, based on the conditions of providing the local markets with satisfactory, good and high competitive status on I. Ansoff's scale (table 1).

The sensitivity analysis of the competitive status components in the food market showed that in order to achieve the stability of the competitive position at the level of not less than 0.67, the competitiveness index should fall within the range of 0.75 and above. The estimation of the integration effects values from the interactions of economic agents in the food market is made in accordance with the objective function of the following type:

Table 1. Optimization of individual indicators of food markets competitiveness in the regions of Siberian Federal District on the criteria of “satisfactory”–“good” – “high” competitive status, calculated by the authors.

Indicators	Criteria	2010	2011	2012	Years 2013	2014	2015	2016
1. The ratio of the gross domestic product share created in the sphere of trade in food products, units.	satisfactory	0.170	0.146	0.162	0.191	0.180	0.192	0.203
	high	0.356	0.357	0.366	0.327	0.365	0.408	0.405
2. Production of the gross regional product created in the sphere of trade for 1 person employed in the economy of the regional trade sphere, million rubles/person.	satisfactory	283.6	301.8	382.1	410.1	528.5	573.2	480.4
	good	392.1	449.6	582.1	586.9	720.1	763.1	638.7
	high	395.9	455.1	589.4	593.4	727.1	770.1	644.4
3. Production of the gross regional product created in the trade sphere, on 1 ruble of fixed assets cost in trade, rubles.	satisfactory	2.704	2.579	1.821	1.317	1.195	1.330	1.133
	high	3.978	3.707	2.903	1.997	1.694	1.876	1.692
4. The profitability coefficient of goods sold by the food product market, units.	satisfactory	0.04	0.012	0.137	0.106	0.057	0.044	0.175
	high	0.1	0.063	0.15	0.11	0.11	0.224	0.221
5. Retail trade turnover of food products per capita in the region, thousand rubles.	satisfactory	24.7	28.8	30.7	34.2	37.5	44.7	32.6
	high	50.1	57.9	62.3	70.3	74.6	90.7	71.3

6. The ratio of the share of retail chains in the turnover of retail trade in food products, units.	satisfactory	0.045	0.057	0.08	0.094	0.109	0.118	0.161
	good	0.17	0.173	0.238	0.272	0.278	0.307	0.337
	high	0.217	0.217	0.297	0.297	0.339	0.342	0.404
7. The coefficient of the food products market change, units.	satisfactory	0.108	0.269	0.268	0.388	0.365	0.315	0.812
	good	0.567	0.352	0.398	0.434	0.489	0.467	0.933
	high	0.873	0.407	0.485	0.464	0.572	0.569	0.951
8. The coefficient food market concentration factor, million rubles per 1 trading enterprise.	satisfactory	4.114	4.375	5.804	6.534	7.665	8.889	7.065
	high	10.78	11.06	13.862	15.341	18.431	22.851	16.55
9. The share of investments in fixed capital in the sphere of food products trade, units.	satisfactory	0.073	0.085	0.064	0.033	0.021	0.026	0.047
	good	0.099	0.148	0.12	0.064	0.037	0.041	0.083
	high	0.116	0.187	0.155	0.083	0.048	0.051	0.105
10. The share coefficient of organizations that carried out technological, organizational, marketing innovations in the field of food trade in the total number of organizations, units.	satisfactory	0.031	0.037	0.027	0.003	0.005	0.005	0.016
	good	0.048	0.078	0.063	0.01	0.016	0.015	0.035
	high	0.058	0.104	0.085	0.015	0.023	0.021	0.046
11. The coefficient of the market openness degree, units.	satisfactory	0.165	0.209	0.168	0.18	0.192	0.208	0.237
	high	0.606	0.798	0.628	0.705	0.755	0.818	0.931
12. The coefficient of the food products market dependence on the imported products, units.	satisfactory	0.200	0.209	0.13	0.188	0.211	0.349	0.428
	good	0.542	0.613	0.387	0.565	0.623	0.437	0.594
	high	0.698	0.798	0.505	0.736	0.811	0.551	0.617
13. The coefficient of the market self-sufficiency with food at the standard level of consumption, units.	satisfactory	0.312	0.314	0.334	0.311	0.310	0.479	0.309
	high	0.615	0.625	0.699	0.645	0.630	0.513	0.643

$$CFM = \alpha_1 \cdot EEI + \alpha_2 \cdot CI + \alpha_3 \cdot IID + \alpha_4 \cdot FMI \geq 0.75$$

and must comply with the system of restrictions:

$$\begin{cases} 0 \leq \alpha_i \leq 1 \\ 0 \leq EEI \leq 1 \\ 0 \leq CI \leq 1 \\ 0 \leq IID \leq 1 \\ 0 \leq FMI \leq 1 \end{cases}$$

designations: CFM – indicator of competitiveness of the food market;

EEI – economic efficiency indicator;

CI – competition intensity indicator;

IID – indicator of innovation and investment development of the food market;

FMI – food market independence indicator.

When all the above-mentioned conditions are fulfilled, in the process of solving the optimization task of the market competitiveness unique indicators, followed by the transition from standard values in the actual, we obtain the optimal values that will allow to make managerial decisions at the input of the local markets ingress in the territories of the SFD in the pre-defined criteria of I. Ansoff's scale. For example, calculations of 2016 among the local food markets of the SFD showed that the minimum, below which the profitability of the food market of any Siberian Federal District territorial market should not decrease in order to ensure a "satisfactory" competitive status in 2017 – 2018 was equal to 0.218, and a "good" one was equal to 0.221.

When regional governments make decisions on the regulation of food markets, such indicators may be planning horizons and/or criteria for decisions on targeted support for an economic agent. Some indicators are not too differentiated by their actual values for ranking local markets in the intervals of competitive status, others, on the contrary, are characterized by high fluctuation amplitude in the coefficients. So, for example, by the coefficient "gross regional product created in the sphere of trade per 1 person employed in the economy in the sphere of trade in the region" for the market to be included in the range of the "good" status in 2015 it was necessary to reach the level 763.142 million rubles on 1 employed in the trade sector, while "satisfactory" interval required only 573.248 million rubles, but in 2016 these figures, taking into account the macroeconomic situation in the year, are lower: 480.4 million and 637 respectively to the criteria of "satisfactory" and "good". The solution of the inverse optimization task in order to substantiate the reference points of regulatory decisions can be used mainly as an operational tool in the horizons of one – two-year planning, which is both its disadvantage and advantage.

Thus, the structuring of the regulating instruments system for the food market competitiveness elements, in contrast to the existing approaches, justifies a fundamentally different approach to the formation of management regulatory decisions based on the targeting of state support for economic agents and simultaneous taking into account the interests and goals of all market economic agents, can improve the quality of self-regulatory impact on the food market development.

Acknowledgements

The presented research was funded by Krasnoyarsk Regional Science and Technology Support Fund in the Framework of the Scientific Project: «Methodological approaches to the formation of a new system for innovative investment sustainability for resource-type regions based on elaboration of the cluster policy mechanisms (as exemplified by the Krasnoyarsk territory)».

References

- [1] Porter M 2008 *The Five Competitive Forces that Shape Strategy* (Harvard Business Review) p 438
- [2] Tirole J A 1996 Theory of Collective Reputations (with applications to the persistence of corruption and to firm quality *Review of Economic Studies* **1** 1–22
- [3] Grass T P, Yushkova L V and Tereshchenko N N 2018 Competitiveness of food markets in Siberia *Proc. of the 31st International Business Information Management Association Conference* 1659–64
- [4] Kuimov V V and Shcherbenko E V 2017 Food resources of Siberia and the region and the prospects for a sustained work in global markets *Journal of the Siberian Federal University. Series: Humanities* **11(10)** 1708–17
- [5] Moskvina A V, Filimonenko I V, Likhacheva T P and Vasileva Z A 2017 Economic value added as an indicator of regional economic growth *Proc. of International Multidisciplinary Scientific Conference on Social sciences and Arts* **1(1)** 605–12

- [6] Khasanova A Sh 2002 Competitiveness of innovation-oriented business entities *Bulletin of Kazan state technical university named after A. N. Tupolev* **1** 41–5
- [7] Kabanikhin S I 2008 *Inverse and incorrect problems* (Novosibirsk: Siberian scientific publishing house) p 450
- [8] Stupina A A, Shigina A A, Karaseva M V, Korpacheva L N and Shigin A O 2016 Control by technological mode parameters with an intellectual automated system *Proc. of XII International Scientific and Research Conference “Topical Issues in Aeronautics and Astronautics”* 12–25