

On the Identification of Local Food Markets Boundaries and Their Development Forecasting

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Abstract: The study discusses the issues, concerning an economical category “local food market”, describes specific character and main principles of local food markets area organization in Russia. The research offer a methodological approach to the determination of local food markets economical boundaries judging by the territory where the group of economic entities can satisfy their requirements and sell the goods with transaction and logistical costs. The research also provide regional food market development forecast in Amur Region, Russia.

Key words: Local food market, market area, markets regulations, development forecast, Russia

INTRODUCTION

Food market is the main instrument of the system of food provision for agricultural products population. In the countries where practically all agricultural products are exchange goods and logistic and distributive infrastructures enable to satisfy needs of all population for food products, food market regulation comes to only a certain influence of the state on price setting by means of assignment of quotas of production volume, use of the system of futures deal and so on. The process of localization of agrarian production of the countries of “gold billion” in terms of growing globalization of economics develops “from below” on consumer’s and small producer’s initiative, expressing in the form of locavore (Engl. locavore, movement in support of local food use consumption of local food) (Durham *et al.*, 2009; Goland and Bauer, 2004; Martinez, 2010; Peters *et al.*, 2009). In the countries with deformed market system, characterized by a number of economic pathologies (uncontrolled level of monopolism, restricted access of economic entities of agrarian sphere to financial resources, underdevelopment of agrarian insurance market, uncontrolled pressure of big business on small management, etc.) and high level of non-market forms of distribution and consumption of food products there

appears an objective need for large-scale impact of the government on the system of goods flow for the purpose of ensuring of physical and economic availability of basic sorts of food goods for population of all territorial formations. Heterogeneity of methods and instruments of provisions markets regulation in separate territories set conditions for necessity of local markets allotment, substantiation of their economic boundaries and development forecasting.

As forecasting technique of agriculture production it is applied the method of exponential smoothing with damped trend that enables in contrast with the method of simple exponential method to use not only existing observations in calculation of anticipated values but to take into account certain delay in display of tendency which makes it possible to give independent estimate of the existing trend (Gardner and McKenzie, 2011; Taylor, 2003).

MAIN PART

In economically developed countries the boundaries of local food markets are estimated as a rule by distance between producers of food goods and their ultimate consumers and overall mix of goods in these markets is often termed as “local food”. Thus, the US Congressional

Act "On food, environmental protection and energy resources" of 2008. Defines local (or regional) food as agricultural food stuffs, processed and delivered to an ultimate consumer within 400 miles from the place of origin of agricultural raw products or within the state where it is produced. Some sources substantiate the boundaries of local food distribution with 50 to 100 to 250 mile radii from the place of origin, depending on a kind of production and specificity of its transportation and storage (Durham *et al.*, 2009). Besides, it is believed that local food can be considered the produced food that is processed and distributed within the boundaries of a particular natural region, received by the consumers as their own region (Goland and Bauer, 2004) without strict ties to the distance.

In the list of benefits and advantages conditioned by the development of systems of local food distribution, a number of analysts (Durham *et al.*, 2009; Goland and Bauer, 2004; Peters *et al.*, 2009) note the growth of consumption of food products with low depth of processing and little content of preservatives; improvement of food quality at the expense of localization of reputation risks of producers; decentralization and demonopolization of food markets; energy resource saving at the expense of shortening the distance of transportation of agricultural production; support of local small business; development of rural territories, preservation of traditional ways of life and meals; conservation of genetic variety of agricultural cultures and animals.

The suggested approach to identification of local food markets and their economic boundaries is based on the following regulations: none of the markets (excepting global) is not closed which considerably complicates the task of determination of its economic boundaries; identification of the area of administrative and territorial formations with the territorial market area is possible only with reservations and assumptions, the boundaries of market area on particular sorts of goods do not coincide as a rule at all.

An ideal case is the situation when concrete goods are produced and consumed within the restricted territory and the price is formed under the impact of demand and proposal in the closed economic space. In reality, the territorial systems of different level are open systems, characterized by intensive inter-territorial flow of goods by virtue of divergence of volumes of produced and consumed production. In this connection, it is reasonable the localization of separate food markets through the aggregate of producers of a product (the group of products) or their consumers, concentrated on a restricted

area. At the same time, the market area is considered in to aspects: for buyers as the area in which economic and physical access to the needed volume of a concrete product of certain quality and for sellers as the area where they can realize the produced goods and get means for support of their production. Such treatment of the market localization contradicts the approach to consideration of the local market of a separate area (geographically localized territory) in which the food goods are produced and consumed but makes it possible to explore the territorial markets of the regional level as open systems, integrating localized markets of particular goods. Thus, the regional food market as economic system can be considered from two positions: firstly as the total sum of producers and consumers of food goods in the territory restricted by administrative boundaries; secondly, as the total sum of local markets of food items and raw product for their production, having diverse character of formation of the resource store and balancing of the demand and offer under the impact of specialization of the region and separate territorial formations and level of integration into the national system of differentiation of labor.

It is obvious that each group of consumers living within the boundaries of separate settlements provisions themselves with the basic sorts of foods directly domiciliary which allows to speak on existence of local markets in settlements (so called local markets), the market area of which is compact and bounded with the settlement. But the market area can cover the territories of several metropolitan regions within and beyond one region for heavy consumers of agricultural products (for example, sugar mills, oil-extracting plants, meat-packing plants and the other enterprises of processing and food industries). That is the boundaries of their local market will be considerably wider and can even go beyond the geographical bounds of the region. Artificial constraint of the market area with the limits of economic area of the region or territories of the other level in these cases can lead to the mistakes in determination of the volumes of resource store of separate food markets.

Analogous differences are observed in localization of the food markets in the market area of producers and processors of agricultural products. Multisectoral character of the majority of agricultural enterprises conditioning a large selection of the produced goods requires introduction of several goods markets with distinct boundaries, different tendencies of development and pricing mechanisms into the market area. Under development of the market infrastructure conditions the extension of market area of the local markets which leads

to the growth of transaction and logistic costs and lowering of competitiveness of the agricultural producers. The more large scale is the market area of big processing enterprises at the expense of the market entry of the other territories and regions. At the same time it should be noted that regional authorities, effecting a policy of supporting commodity producers, often create administrative barriers for restriction of the arrivals of goods produced in the other regions which leads to deformation of a naturally forming market area of separate local markets and impacts on its fragmentariness.

A natural regulator of the market area is the state in the arsenal of which there are instrument such as agrarian, finance and credit, tax and social policy, direct budget support, special-purpose programs and so on (Stupnickova, 2013; Ulez'ko and Pashina, 2013). A certain influence on formation of the market area is exerted by the processes of agro-industrial integration, connected with the development of structures of holding and cluster types, economical activity of which by virtue of the large scale leads to "distortion" of the market area of the regional market and conditions the growth of the level of monopolization of local food markets.

The market as regulator of reproduction processes, forming the impulses of influence on economic units under the impact of consumer's demand, often leads to disproportions of the development of economic space of separate territories as the state of market is estimated not only by the demands of consumers within the boundaries of the territorial formation but beyond its borders as well. Sustainable growing demand for particular kinds of agricultural products and provisions from consumers beyond the region enables to lead the conversation toward so called «growing-points» of regional agrarian economy, making it possible to increase production volumes in a short space of time at the expense of redistribution of resources in favor of leading branches. Such generator of the development of agrarian sector in Amur region is output of soya and products of its processing. Rising demand for soya, soyabean oil and shrot has led to the situation in which during recent years in the structure of the regional areas under crop a share of this agriculture has increased 2/3. At the same time, low level of technological equipment of soya producers, use of mineral and organic manures and chemical weed and pest killers have conditioned low crop yield and trouble of the processes of reproduction of soil fertility and uncontrolled growth of the areas under soya crops has caused the disturbance of scientifically grounded system of agriculture.

To substantiate the expected volumes of production of the basic sorts of agricultural production in Amur region it was used the model of exponential smoothing with damped trend, values of parameters of smoothing α , γ and φ , providing the needed level of validity of forecasts for each sort of product were determined in the course of experiments, the idea of which was in repeated model execution for each sort of production and identification of soothing parameters combination, allowing to minimize average of relations between errors squared and actual values. Table 1 gives an example of calculated variables of soothing for baseline variant and relations between error squared and square of corresponding actual values for baseline variant.

Table 2 shows the results of predictive calculations and comparison of increase average annual volume of production of basic sorts of agricultural products with the volumes of average annual balance of inter-regional exchange.

Basic variant, oriented to implementation of the regional target program «Development of agriculture and regulation of the markets of agriculture and raw products and food in Amur region for 2013-2020», supposes the deepening of the region specialization in production of soya, potatoes and cereals, providing the growth of intensity of inter-region food exchange according to regulations of inter-regional differentiation of labor. At the same time, one should note that in the local markets of cereals and grain crops it is supposed the import of rather sufficient output of durum wheat and flour for the enterprises of food industry as the quality of the main part of the regional produced grain does not meet their requirements. The growth of output of feed grain and soya, by processing of which the soya shrot is obtained, objectively extends the resource input of formula feed industry and makes it possible the growth of such branches as pigstry and poultry. The availability of large quantity of natural forage grasslands creates prerequisites for increasing livestock population of special beef breed and decrease of cost price of milk at the expense of optimization feed allowance.

Table 1: Calculated values of soothing parameters and average relations between errors squared and square of actual values for baseline variant

Kinds of products	Soothing parameters			Average relations between errors squared and square of actual values (%)
	α	θ	γ	
Cereals	0.4	0.6	0.8	5.95
Soya	0.5	0.6	0.2	5.94
Potatoes	0.3	0.8	0.2	3.47
Vegetables	0.3	0.8	0.3	4.56
Cattle and poultry	0.3	0.8	0.4	2.51
Milk	0.3	0.8	0.4	0.85
Eggs	0.3	0.8	0.4	2.01

Table 2: Anticipated volumes of production of agricultural products in Amur region, thousand tons

Indicators	Actually on average (2009-2013)	Forecast on average (2016-2020)	Production volume increase	Average balance of inter-regional exchange (2008-2012)
Cereals				
Basic variant	250.0	348.4	98.4	32.4
Optimistic variant		416.5	166.5	
Soya beans				
Basic variant	625.7	899.9	274.2	290.4
Optimistic variant		1 049.2	423.4	
Potatoes				
Basic variant	263.7	377.6	113.9	94.8
Optimistic variant		397.5	133.9	
Vegetables				
Basic variant	56.7	73.3	16.6	-49.0
Optimistic variant		81.8	25.1	
Cattle and poultry in live weight				
Basic variant	52.9	66.7	13.8	-22.9
Optimistic variant		72.8	19.9	
Milk				
Basic variant	163.1	178.7	15.6	7.6
Optimistic variant		191.0	27.9	
Eggs (millions)				
Basic variant	242.3	272.5	30.2	-31.5
Optimistic variant		286.3	44.1	

By realization of optimistic scenario concerning involvement of all agricultural lands of the region and increase of cattle and poultry into production turn it can be covered >51% of the regional deficit of vegetables and about 87% of the meat deficit. The local market of eggs in realization of this scenario becomes independent.

CONCLUSION

The most adequate for the analysis of local food markets seems the level of the region and its economic space, the boundaries of which do not the barriers for flows of products and provides an opportunity of free transmission of goods inside and outside the region. It is necessary to note that the region as an administrative-territorial unit is the smallest area formation, within the limits of which it can be realized proper measures on regulation of industrial markets, support of the producers of separate kinds of agricultural products and food goods, stimulation of the development of separate forms of management, development of market infrastructure and so on.

The identification of market area of food markets is reasonable to carry out proceeding from the territory in which the group of homogeneous economic units can satisfy the requirements in a concrete sort of product (agriculture production or products of its processing) or realize the produced goods with transaction and logistic expenses, enabling to provide their competitive ability. The agar sector in Amur region a sufficient potential on self-provision of practically all kinds of agriculture production in the region. The key task of development of the local market of these kinds of products will be power enhancement of processing enterprises, food line

extension, safekeeping of consumer properties of agriculture production and products of its processing, food quality improving and cost saving, etc. Particular attention should be paid to reaching new sales market for soya and products of its processing, cereals and potatoes.

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