ORGANIZATION AND MANAGEMENT OF MARKETING PROCESSES ON THE BASIS OF STATISTICAL METHODS OF RESEARCH

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The author suggests the econometric model of evaluating the stability of social and economic systems. The managing parameters of SES stability are defined. The index of resources distribution can be one of the main ones.

Marketing is a complex multifunctional mechanism of co-operation of great number of factors of human activity. It forms the principles of managing the socio-economic system (SES) in the most unpredictable element of the market. The sustainable development of national economy depends on the correctly chosen strategy and marketing tactics.

The structure of marketing as the object of research is presented in fig. 1.

The leading analyst in the sphere of strategic forecasting, Hazin M. L. has shown that the wrong marketing strategy of the USA has led to the current world financial crisis. Therefore the organization and management of marketing processes is of big scientific and social importance.

In the course of research the purposes have been transformed by the author into the criteria and the indicators of stability of the system. The system of indicators of stability should include:

1. The indicators characterizing the dynamics of the external and internal environment.

2. The indicators characterizing the limits of potential fluctuation whose level will allow determining the degree of stability or the level of supply of stability.

3. The relative indicators reflecting long-term (strategic) aspect of stability.

This system of indicators is to be considered as the system of strategic markers for the estimation of dynamic stability of the system.

The ideology of sustainable development is based on active social policy where there must be a balance between the demand of mankind and the existing supply to satisfy the demand.

Critics of the theory of sustainable development say that the concepts of "steady" and "development" contradict one another, and that development cannot be steady, as "it is necessary to refrain from something: either from development, or from stability". However, from the philosophical point of view, development is but a case when complexity, or the level of the organization of system increases, decreasing its entropy.

Let us consider the economic-mathematical models of stability of social and economic system of random sets (1) and investigate the behavior of social and economic system using the mathematical model of random set

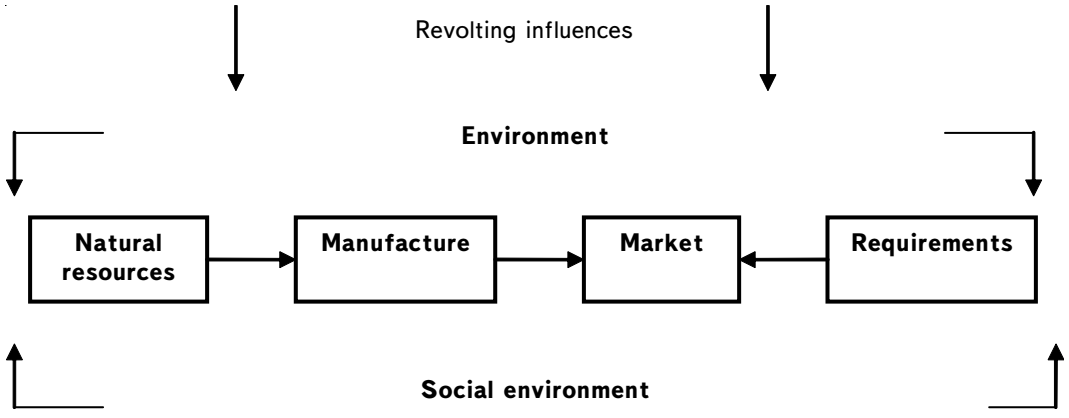

Fig. 1. **Marketing as the object of management**

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$$F = \frac{1}{4}kx^4 + \frac{1}{2}ax^2 + bx,$$

where x - the population (the number of people);

b - the relative indicator characterizing the resource base of social and economic system; a - quantity of resources per person (resources/person); k - factor of stability of social and economic system (resources/person^3).

On the basis of analysis of phase portrait of random set

$$\frac{dF}{dx} = kx^3 + ax + b,$$

by the means of Mathcad program (fig. 2), it was rationed that the parameters a and b have the strongest influence on the stability of SES:

$x := -100...100$ $b := 100$ $a =: -10$ $\alpha := 0...1$

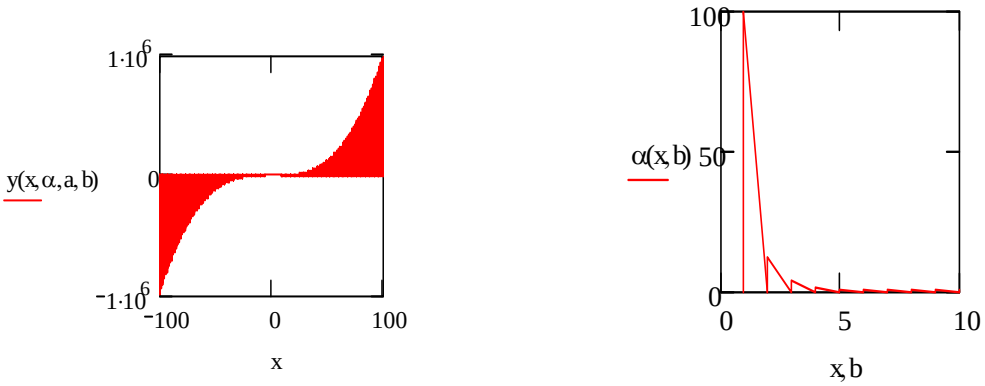

Fig. 2. **Research of the model of stability of social and economic system by the means of Mathcad program**

A method that includes both these parameters was developed in order to perform the quantitative estimation of stability of the socio-economic system.

As parameter a uses the value of the index of physical volume of GDP per capita, and parameter b is an index of physical volume of gross basic stock accumulation, margin value of the area of stability of the system a_p can be found using the equation (1), where b is an index of physical volume of gross basic stock accumulation (1995=100) .

$$a_p = \sqrt[3]{b^2}.$$

For formula (3) the calculation values of parameter a_p were taken from table 1.

As a quantitative estimation of SES stability we can use a relative index, characterizing the rejection of the real parameter a systems from the margin of stability a_p

$$Y = \frac{a - a_p}{a_p},$$

where a is the value of the index of physical volume of GDP per capita (EU 25 = 100);

a_p is the calculation value of index of physical volume of GDP per capita (EU 25 = 100) (see table 1)

This equation (4) was used to estimate the stability of Russia and the countries of the EU for the period (1999 - 2005) of the most strong socio-economic changes in Europe. For findings see table 2.

Using the principle of the golden section, the estimation of SES stability can be broken up into three intervals:

- ♦ unsteady area 0<Y<1;
- ♦ quasistable area 1<Y<3;
- ♦ steady area of 3<Y.

The analysis rationed that for the period from 1999 to 2005|turn| the following countries were in the unsteady area of socio-economic development: Russia, Bulgaria, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia and Estonia.

There were countries in the quasistable area: Greece, Ireland, Spain, Cyprus, Malta, Portugal, Slovenia and Czech republic. Steady-area countries were: Austria, Belgium, Great Britain, Germany, Denmark, Italy, Luxemburg, Netherlands, Finland, France and Sweden.

Thus, by the application of the suggested method it is possible to estimate the stability of SES on the basis of the index of physical volume of gross basic stock and the index of physical volume of GDP accumulation per capita.

Table 1

Estimation of settlement value of an index of physical volume of GDP per capita

Russia and the countries of EU	b - index of physical volume of total accumulation of fixed capital (1995=100)			a_p - settlement value of an index of physical volume of GDP per capita (EU 25 = 100)		
	2000	2002	2005	2000	2002	2005
1	2	3	4	5	6	7
Russia	79,8	90,4	125,6	18,5	20,1	25,1
Austria	117	109	116	24,0	23,0	24,0
Belgium	123	120	134	25,0	24,0	26,0
Bulgaria	118	157	242	24,0	29,0	39,0
Hungary	150	174	202	28,0	31,0	34,0
Germany	113	102	102	23,0	22,0	22,0
Greece	154	173	205	28,7	31,0	34,8
Denmark	136	134	156	26,4	26,2	29,0
Ireland	197	204	261	33,8	34,7	40,8
Spain	141	153	182	27,0	28,6	32,1
Italy	119	127	126	24,2	25,3	25,1
Cyprus	113	126	144	23,4	25,1	27,5
Latvia	245	308	508	39,1	45,6	63,7
Lithuania	157	198	285	29,1	34	43,3
Luxembourg	143	163	170	27,3	29,8	30,7
Malta	103	72	101	22,0	17,3	21,7
Netherlands	138	132	133	26,7	25,9	26,0
Poland	182	154	174	32,1	28,7	31,2
Portugal	148	144	127	28,0	27,5	25,3
Romania	102	121	165	21,8	24,5	30,0
Slovakia	123	139	168	24,7	26,8	30,4
Slovenia	165	168	196	30.0	30,4	33,7
Great Britain	135	144	158	26,3	27,5	29,2
Finland	146	148	167	27,7	28,0	30,3
France	126	127	138	25,1	25,3	26,7
Czech republic	104	117	125	22,1	23,9	25,0
Sweden	128	124	144	25,4	24,8	27,5
Estonia	145	197	269	27,6	33,8	41,7

Table 2

Estimation of the stability of Russia and the countries of EU

Russia and the countries of the EU	*a* - value of the index of physical volume of GDP per capita (EU 25 = 100)			Indicator of SES stability -Y		
	1999	2002	2005	1999	2002	2005
1	2	3	4	5	6	7
Russia	28	32	43	0,5	0,6	0,7
Austria	127	122	124	4,3	4,3	4,1
Belgium	118	120	118	3,7	4,0	3,5
Bulgaria	26	30	34	0,08	0,03	-0,1
Hungary	51	59	62	0.8	0.9	0.8
Germany	117	111	110	4,1	4.0	4.0
Greece	71	79	84	1,5	1.5	1,4
Denmark	125	123	121	3.7	3,7	3.2
Ireland	121	132	138	2,6	2,8	2,4
Spain	92	97	98	2,4	2,4	2,1
Italy	113	108	101	3,7	3,3	3,0
Cyprus	84	86	90	2,6	2,4	2.3
Latvia	34	40	48	-0,1	-0,1	-0,2
Lithuania	37	42	52	0,3	0,2	0,2
Luxembourg	227	232	252	7,3	6,8	7,2
Malta	78	76	74	2,5	3,4	2,4
Netherlands	125	128	127	3,7	3,9	3,9
Poland	46	46	49	0,4	0,6	0,6
Portugal	75	74	73	1,7	1,7	1,9
Romania	25	28	33	0,1	0,1	0,1
Slovakia	49	52	58	0,9	0,9	0,9
Slovenia	75	76	81	1,5	1,5	1,4
Great Britain	111	114	115	3,2	3,1	2,9
Finland	110	111	110	3,0	3,0	2,6
France	110	111	110	3,4	3,4	3,1
Czech republic	67	68	74	2,0	1,0	1,9
Sweden	118	114	114	3,6	3,6	3,1
Estonia	40	48	60	0,4	0,4	0,4

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