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Integrative model of customs and foreign economic activities as element on the system of Environmental economics and Sustainable development

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Abstract. Development of the theory assumes existence in its basis of an idealized object – theoretical model. Creation of such object – a necessary stage of creation of any theory, including theories of customs management.

Customs management represents the theory of management of customs affairs – the customs organizations, processes (functions, procedures, operations), technologies, resources (personnel, information, etc.), services. [1]

In turn consolidates customs affairs in a certain measure and governs the relations of two spheres – the foreign economic and customs activity in the conditions of strategic changes. Political, social, economic, technology and ecological factors belong to the major factors influencing interaction of such spheres. In this regard creation and development of theoretical model, taking into account its features and also influence of the factors demanding its high-quality modernization is a fundamental condition of carrying out system researches, the basis for preparation and different acceptance of the effective operational, tactical and strategic solutions. It is, first of all, about decisions in such areas and fields of activity as policy, economy, customs regulation, environment protection and environmental management.

The model of the foreign economic and customs activity offered in this article is integrative and, according to developers, has to be considered as one of key components in a control system of environmental management and environmental protection.

A single model of foreign economic and customs activities. When creating a shared model, the following core conditions should be considered. First, the globalization of world

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trade raises the issue of improving the management of foreign economic activity and customs operations as a general complex problem. And second, as a consequence, the efficiency of foreign trade will depend not only on the effectiveness of tariff and non-tariff regulation measures, but largely (directly and indirectly) on the quality of tools of customs administration, on the levels of technology and the information support of such activities. And the third, - political, social, economic, technology and ecological factors belong to the major factors influencing interaction of spheres of the foreign economic and customs activity. [2]

In this regard the central question in a solution of the problem of management of customs affairs is the question of representation of spheres of the foreign economic and customs activity as uniform theoretical model. The approach offered below is considered as a basic condition for such decision and also for inclusion of such model as an element in other control systems of higher level. Control systems of political, social, economic institutes, including control systems of environmental management and environmental protection in turn belong to them.

The shared model for foreign economic activity and customs operations both the spheres of activity are interrelated as regards to the system of commodity and financial flows, the mechanisms of regulation of foreign trade and the relevant channels of information and analytical interaction. The theoretical model is constructed in terms of enhancing the effectiveness of all the activities through the consistent effect on commodity and financial flows by all available controllers.

The object of management (regulation, administration or control) is a system of commodity and financial flows. To achieve political, economic and other explicit or implied objectives this control basically requires to shape an adequate mechanism and to implement effective restructuring strategies for this system.

All the situations arising in the system, mechanisms and regulatory strategies are presented in the relationship of three levels, which have a strong impact on the system that are international (interstate), state and customs.

The central item of regulation in the model is the system of commodity and financial flow, the management mainly controls the search for effective alternatives to such a system and restructures the existing platform.

The model of coherent interaction of all the spheres of activity is presented as an object of customs management theory. The formalization and the study of such scientific abstractions allow us to solve the problems in the theory and practice of customs business, to work out the adaptive organization structure, to develop the appropriate algorithms and control technology. [1]

The algorithm of management in the customs business. The algorithm of shaping the mechanism and the strategy of management is provided as an algorithmic sequence used to assess an initial condition in the international, public and customs areas, to identify the problems in the system of commodity and financial flows, to solve the problems in the regulation and customs administration, to adapt the mechanism and the strategy of management.

In the initial steady state all the interacting spheres of activity (international (interstate), the state and customs [5]) are characterized by:

- the regulatory objectives (activities) and the system of commodity and financial flows with the appropriate set of indicators of their efficiency;
- the composition and structure of the mechanisms of regulation in the relevant areas;
- the regulatory strategy of activities – an algorithm of targeted restructuring for the system of commodity and financial flows;

- information and analytical support and information channels of interaction in the spheres of activity;
- duration of the time interval of activity.

A critical disagreement between the objectives and the outcomes is seen as a problem. Its decision was made using the information and analytical support in the following areas: analyzing the system of commodity and financial flows, correcting or synthesizing the model of the system of commodity and financial flows; restructuring the regulation and customs administration of foreign economic activity; adapting the existing or developing the new management strategies and (or) customs administration of foreign economic activity; implementing the strategies (Fig. 1).

When analyzing the system, the procedure of identification is implemented and the problem situation in the system of commodity and financial flows is studied; the problem is formulated as a derivative of the situations arisen or predicted at the global, state, and customs levels, respectively.

Here under study is, primarily, the paradigm of foreign economic activity created by the methods and means of customs administration. And also, a practical solution to the problem of effective regulation of foreign economic activity requires to include the original (main) factors determining the structure and parameters of financial and commodity flows. The most significant among them are the nature and specifics of the state, the model of economic structure of the country and its degree of sustainability, the strategic risks in the foreign economic activity, the current level of information and analytical support and data communications in this area.

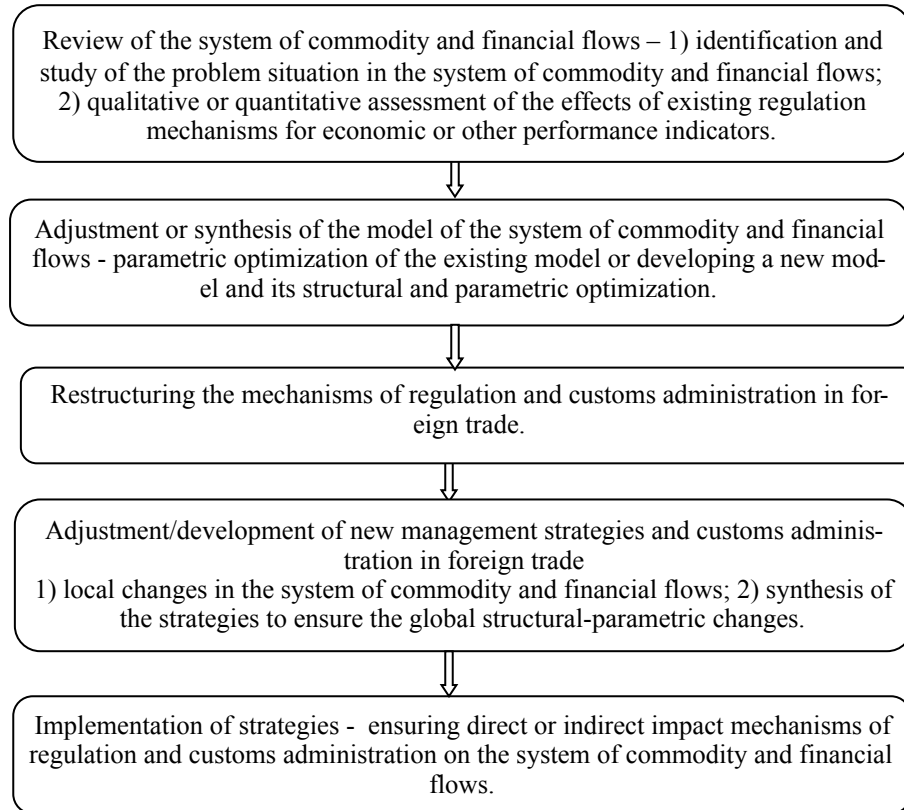


Fig. 1. Control algorithm of the system of commodity and financial flows in the foreign trade

A theoretical model of customs management. With the view of the above the management of customs business is performed using the shared model of foreign economic and customs activity and is determined by a set of functional dependencies as follows:

$$\begin{cases} M_t(Y) = M\{M_t, P_t[G_t(S_t, R_t, W_t), Z_t, Y]\}; \\ M_s(Y) = M\{M_s, P_s[G_s(S_s, R_s, W_s), Z_s, Y], M_t(t)\}; \\ M_m(Y) = M\{M_m, P_m[G_m(S_m, R_m, W_m), Z_m, Y], M_s(Y), M_t(Y)\}, \end{cases} \quad (1)$$

where,

- m,s,t are the levels of control (administration) of the system of commodity and financial flows: international (inter-state), public and customs, respectively;
- $M_m(Y)$, $M_s(Y)$, $M_t(Y)$ are the mechanisms of regulation: international, public and customs;
- M_m , M_s , M_t are the existing regulatory mechanisms;
- Y is the considered interval of time;
- P_m , P_s , P_t are the problem situations;
- Z_m , Z_s , Z_t are the purpose activities;
- G_m , G_s , G_t are the systems of commodity and financial flows;

- S is the structure;
- W is the system of performance indicators;
- R is the strategy of regulation of the systems of commodity and financial flows.

Essentially, expression (1) is a formalized single model of customs management. From its analysis it follows that the functional data characterizing the international (inter-state) and state regulation depend on the problem situation in the foreign economic activity and on the effects of the coordinated regulatory mechanisms. In its turn, the problem situation in any spheres of activity is determined by the relevant objectives, as well as by the structural and parametric characteristics of the system of commodity and financial flows, as well as the management strategy.

The given functional data combine all the principal items of management, and indicate the place and role of customs service in tackling the problem of effective regulation in the foreign economic activity.

Basically, the synthesis of mechanisms of regulation in the foreign economic activity results in creating the model of regulation of parameters for the system of commodity and financial flows. This model allows us to make a transition from the structural description of this system as a item of control to a parametric one, to evaluate the changes of parameters of that system and to optimize them.

The availability of parametric relations between the mechanisms of regulation and the structural and parametric characteristics of the system of commodity and financial flows and the strategy parameters of their regulation allows us to formulate and synthesize the effective control mechanism, for example, in the foreign economic activity. Our task is to develop the requirements for the mechanism of regulation of foreign trade based on the research and optimization of structural and parametric model for the system of commodity and financial flows. In particular, for the government regulation in Russia it is a problem of selection and application of tariff and non-tariff measures so that to optimize the financial and commodity flows in its foreign trade.

A set of theoretical problems of customs management. The system of functional dependencies (1) also establishes the dimension of control tasks. In the most general case it is the search for effective mechanisms of regulation, for example, in the foreign economic and customs activities.

The relationship between the tasks is found in accordance with the level of regulation. This allows us to set and solve the problems of management as problems of analysis or synthesis of mechanisms and regulation strategies for any of the levels of regulation. When the mechanisms and the processes of regulation are formally presented these tasks can be formulated only in general terms: without specifying the details of factor space, without explicitly indicating the objective functional data, without structuring and the appropriate parameterizing the targets and mechanisms of regulation.

However, such an approach is undoubtedly necessary, since its absence does not allow the purposeful decomposition of the problems of regulation or customs administration to be solved in the foreign economic activity, makes it impossible to tackle them as a set of important problems, and, accordingly, does not allow developing the appropriate management methodology.

Synthesizing the mechanism of regulation in foreign trade. The objective of this class is formulated as a problem of developing the mechanism that provides a hierarchical

impact on the system of financial and commodity flows in the foreign trade in order to optimize this system at any levels. The solution to this problem is to define the principles, measures and instruments of impact on this system, their interactions and characteristics, and in general to develop the regulation mechanism.

The problem is seen as follows. In the problem situation of Px ($x=t,s,m$) the mechanism of regulation in the foreign trade activities of Mx is shaped and its impact on the system of commodity and financial flows of Gx as Rx strategy in the of time interval of τ will ensure the optimized structure of the system of Gx° according to the criterion of $extW(Sx^\circ, Rx, \tau)$, where W is the index of effectiveness (performance), $ext W$ is its extreme value.

Let us state it using the following formal entry:

$$Px[Gx(Sx, Rx, Wx)] \rightarrow \frac{Mx \rightarrow Rx}{Mx^\circ, Zx, \tau} \frac{extWx(Sx^\circ, Rx, \tau)}{} \rightarrow Gx^\circ \quad (2)$$

where

m, s, t are the levels of regulation (administration) of the system of commodity and financial flows: international (inter-state), public customs, respectively;

Px is the problem situation, ($x=t,s,m$);

Gx, Gx° are the investigated and optimized systems of financial and commodity flows;

Mx, Mx° are the investigated and optimized mechanisms of regulation for the foreign trade;

Sx, Sx° are the investigated and optimized structures of financial and commodity flows;

Wx is the criterion of optimality of $extW(Sxt, Rxt)$ for the system of financial and commodity flows;

Zx, Rx are the objective and the strategy of regulation of foreign economic activity;

t is the time activities.

In statement (2) there are three blocks. The first one is a problem situation in the system of commodity and financial flows. The second one is the content of the task: to transform the mechanism of regulation in the foreign trade activities (the numerator) with regard to its status, objectives and the considered interval of time (the denominator). The third one is an objective of solving the problem: to establish the system of commodity and financial flows of Gx° as optimized according to the criterion of Wx .

Synthesizing management strategies in the foreign economic activity. When tackling this problem, you must answer the questions: to what extent, and in what sequence to use the capabilities of the chosen control mechanism to optimize the parameters for the system of commodity and financial flows in terms of change. In other words, how to efficiently use the mechanism of regulation.

The synthesis of strategy will be formulated as the task of algorithm writing that provides a consistent impact of control mechanism on the system of commodity and financial flows in order to optimize it.

The problem is formulated as follows. In the problem situation of Px ($x=t,s,m$) an algorithm is determined to impact the mechanism of regulation in the foreign economic activities of Mx on the system of commodity and financial flows of Gx in the Rx strategy to

optimize the structure of the system of Sx^0 using criterion of $extW(Sx^0, Rx, \tau)$ in the time interval of τ .

In formal terms the problem is stated as follows: [3]

The fundamental difference between expressions (2) and (3) is that in the first case, a focus is on developing the control mechanism, and in the second one it is on the strategy of its implementation under real conditions. Consequently, the first problem is solved by creating or developing the mechanism, the second one is solved in the process of its application.

The entire set of theoretical problems in the customs management, ranked in accordance with the levels of regulation and administration, are presented in table 1. Here are some general patterns of setting the problems in order to synthesize the mechanisms and the strategies of regulation and administration at the international, governmental and customs levels.

It is important to note that serious problems arise when the problems of parametric or structural and parametric optimization are solved for the system of financial and commodity flows. Two of them are basic: theoretical and technological.

The theoretical problem arises when it is required to develop rather complex application mathematical models for the system of commodity and financial flows and to apply the appropriate optimization methods. The second one is caused by the need to create techniques to solve the problems of optimization and control with reference to the controlling principles [3].

In our view the solution of these problems is achievable and becomes most effective using the proposed conceptual paradigm of controlling based on the information and analytical techniques [4]. The development of such techniques is a focus of research in the field of customs management.

Conclusion.

Thus, the presented above is a direction of developments in the customs management, through creating a shared model of foreign economic and customs activities. The model is considered as a basic component of the customs management, and is focused on improving the effectiveness of all the activities as exposed to all existing regulators. The development of customs service in Russia on the basis of this model will allow creating the adaptive mechanisms of control by customs authorities that are aimed to improve the efficiency and quality of provided services. The implementation of this idea is proposed on the platform of controlling with the use of information and analytical techniques.

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