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Economic Cybernetics – A New Branch of Contemporary Science

The paper outlines the complexity of social phenomena and especially economic phenomena which require more and more the establishment of economic cybernetics as an autonomous subject and its separation from general cybernetics. Economic cybernetics is defined and the research trends of this new scientific subject are described further on.

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In the field of scientific knowledge cybernetics represents one of the most important findings of human genius. Cybernetics — the science that revolutionized the traditional activity of some decisive sectors of contemporary society material production — was to play a leading part in the scientifical-technical development, in the firms modernization, in technological processes automation, in output improvement and growth of social labour productivity.

Cybernetics has highly contributed to outerspace research and knowledge — epochal conquest of our generation — as well as to many other findings performed in the fields of social and natural sciences.

Researches concerning the range of applied cybernetics are considered of present, great scientific and practical interest performed in the conclusive field of material production, of economy management — from the initial firm upwards along the scale of the whole national economy.

The social phenomena complexity and especially the complexity of economic phenomena require ever strongly the establishment of economic cybernetics as an autonomous subject and its separation from general cybernetics.

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The main requirement of mathematical and cybernetical applied methods in economic science is the preliminary analysis of qualitative nature of investigated phenomena. Applied mathematics and cybernetics in technique and economy form the real expression of science changing process into a direct force of production.

The output and labour organization in contemporary society require an ever wider application of modern mathematics and cybernetics in order to ensure a scientific leadership.

Marx's statement concerning the fact that science reaches perfection only when it succeeds to use mathematics comes to life nowadays by the process of mathematics applied in science. Marx's statement was not a bare declaration but Marx's own basic method of scientific work. He found mathematics was the gauge for quantitative determination of social phenomena he investigated.

Marx was not a trained mathematician but he used, with unparalleld skill, mathematical equipment in economic sciences. He considered mathematics was an indispensable working tool, daily necessary, in the creation of his monumental work.

Marx was not only the titan of social thought but also a subtle mathematician. He drew up economico-mathematical patterns of high theoretical and practical value. The famous sketch of the enlarged reproduction — striking example of applied mathematics in economics — brilliant creation of marxist political economy, can be quoted as an example of social production pattern.

The complexity of contemporary society, the sizes of production forces, include the rapid knowledge of social development proportions, especially in the conclusive field of material production.

Under the circumstances of the production rhythm rapid growth and as a consequence of the giant proportions reached by economic information, one of the tasks of specialized cybernetics consists in the drawing up of an economic information system able to contribute to the knowledge of firms economic activity, of branch or of the country's economy as whole. This information system should be established on an accurate, effective, nonexpensive, high mechanization. Its working speed and structure should be such as to signal out in due time the phenomena occuring within companies or in the whole national economy range.

According to this view-point, the economic cybernetics investigates the processes of obtaining, transmitting, keeping, and codifying economic information, the data-processing methods as well as various devices performing the transmission and processing of information.

From cybernetics view-point the economy — from the simple company up to the whole economy — appears as an extremely complex, controlled system. The national-, branch- and firm economy may be considered as social cybernetic complexes. They are adjusted by means of management and control system of technical economic sizes and parameters established by the State Plan. The management and its complement, the control, are secured by means of plan indexes system. Both management and control should ensure the adjustment and stabilization of plan tasks fulfillment.

We shall try to define the economic cybernetics as a science based on the objective laws knowledge of social development which investigates the management and control systems and processes in economy and draws up the necessary, economic, information system for the improvement of economy management methods.

Investigations in economic cybernetics may present a wide range of practical solutions to draw up the economic pattern for company, branch and the

whole economy keeping in mind the territorial profile. These will support the planning work.

As the society material production develops, the necessity of an accurate, fast knowledge of ever more complex phenomena taking place in economy increases, in order to secure operative management measures of economic activity with maximal efficiency.

Practice shows economic cybernetics becomes a powerful tool of scientific prevision. It becomes a practical tool in the solution of multiple problems of economic building-up.

On the occasion of the 25th anniversary since cybernetics has been founded, we state that the theoretical and practical results obtained by economic cybernetics in our country up to now represent a modest contribution to the development of this new, scientific subject whose utility is ever more, worldwide asserted.

LA CYBERNETIQUE ECONOMIQUE — UNE NOUVELLE BRANCHE DE LA SCIENCE CONTEMPORAINE

La cybernétique représente, dans le domaine de la connaissance scientifique, une des grandes découvertes du génie humain.

On considére comme étant d'une grande actualité scientifique et surtout pratique, les rechèrches sur la sphère d'application de la cybernétique dans le domaine décisif de la production matérielle et de la direction économique depuis l'entreprise et en allant vers le sommet, à l'échelle de toute l'économie nationale.

La complexité des phénomènes sociaux et, tout d'abord, des phénomènes économiques impose de plus en plus la délimitation de la cybernétique économique en tant que discipline indépendante et sa séparation de la cybernétique générale.

L'économie considérée du point de vue cybernétique — depuis l'entreprise et jusqu'à l'économie dans son ensemble — apparait comme un système commandé, extrêmement complexe. Nous pouvons considérer l'économie nationale, l'économie par branche, l'économie par entreprise, comme des complexes sociaux cybernétiques réglés par l'intermédiaire du système de commande et de contrôle des proportions et des paramètres techniques et économiques établis par le plan d'état. La commande et son complément, le contrôle, sont fixés par le système des indicateurs de plan. La commande et le contrôle doivent assurer le règlage et la stabilisation de l'exécution des charges prévues dans le plan.

Cette étude définit la cybernétique économique comme étant une science qui, basée sur la connaissance des lois objectives du développement social, analyse les systèmes et les processus de commande et de contrôle dans l'économie, et élabore le système informationnel économique nécessa re au perfectionnement des méthodes de direction de l'économie.

Partant des objectifs économiques, élaborés de façon scientifique, par le parti et l'état, les recherches dans le domaine de la cybernétique économique peuvent offrir une large gamme de solutions pratiques pour la mise au point du modèle économique par entreprise, par branche, par économie et en profil territorial, pouvant apporter une aide au travail de planification.

ЭКОНОМИЧЕСКАЯ КИБЕРНЕТИКА — НОВАЯ ОТРАСЛЬ СОВРЕМЕННОЙ НАУКИ

Кибернетика является в области научных знаний одним из великих открытий человеческого гения.

Большую научную актуальность, в особенности, практическую имеют исследования сферы применения кибернетики в решающей области материального производства, руководства народным хозяйством от предприятия и вплоть до народного хозяйства в целом.

Комплексность социальных явлений и, прежде всего, экономических все больше требует отграничения экономической кибернетики в качестве самостоятельной дисциплины, ее отделения от общей кибернетики.

Экономика, рассматриваемая в кибернетическом отношении — от предприятия и вплоть до народного хозяйства в целом — представляется чрезвычайно сложной управляемой системой. Мы можем считать народное хозяйство, экономику отрасли, экономику предприятия кибернетическими социальными комплексами, регулируемыми при посредстве системы управления и контроля пропорций и технико-экономических параметров, устанавливаемых государственным планом. Управление и его дополнение — контроль — обеспечиваются при помощи системы плановых показателей. Управление и контроль должны обеспечивать регулирование и стабилизацию выполнения предусмотренных в плане заданий.

В статье экономическая кибернетика определяется как наука, которая на основе знания объективных законов социального развития изучает системы и процессы управления и контроля в экономике, разрабатывает систему экономической информации, необходимую для совершенствования методов руководства народным хозяйством.

Исходя из экономических целей, научно разработанных партией и государством, исследования в области экономической кибернетики могут дать широкий диапазон практических решений для разработки экономической модели по предприятию, по отрасли, по народному хозяйству и в территориальном разрезе, помогающей в плановой работе.