THE SCIENTIFIC SESSION OF THE CENTRE OF ECONOMIC COMPUTATION AND ECONOMIC CYBERNETICS

The fourth annual Scientific Session of the Centre of Economic Computation and Economic Cybernetics was held in February 1969. The session has been an opportunity for disclosing and confronting the results obtained in the studies carried out during the preceding year, for promoting lively debates and a fruitful exchange of opinions, as well as for the mutual information in problems of economic computation and economic cybernetics.

The proceedings took place in a plenary meeting, as well as in sections and subsections, featuring within a unitary and integrated viewpoint the scope of the problems under consideration at the Centre of Economic Computation and Economic Cybernetics, namely: economic cybernetics, operations research, informatics and the applications of computers in economy.

The reports submitted on the occasion were contributed by a great number of scientists, teaching staff, experts in economy and mathematics and engineers, reflecting the most various directions and fields of research, derived from the practical needs of Romanian economy and combining basic and applied research. A number of over 190 authors signed the 143 papers listed on the agenda of this scientific session.

A number of reports dealing with the applications of cybernetics in economy and designed for a broad audience were submitted during the plenary meeting. These reports were: "Notes on the model of reproduction on an expanded scale, as conceived by Karl Marx" by Professor Miron Constantinescu; "Political economy of socialism and mathematics" by Professor Dr. Emilian Dobrescu; "Progress and trends in operations research" by Dr. Mircea Maliţa; "Application of mathematical methods to the quantification and optimization of economic processes" by Professor Nicolae Teodorescu, Member of the Academy; "Complex computation systems. Rational utilization concepts and technical economic indexes" by Professor Dr. Mihai Drăgănescu, Professor Dr. Nicolae Racoveanu and Dr. Dragoş Vaida.

In the symposium headed "Economic Cybernetics", thirty two papers were submitted. Most topics presented for consideration in these papers referred to the applications of cybernetic methods to planning and macroeconomic analysis problems. New trends were emphasized in the use of economic cybernetic methods, attention being particularly focussed on simulation, viewed as an analytical tool for macroeconomic phenomena. Moreover, considerable weight was bestowed on reports regarding the balance of relationships among the various economic branches, a fundamental tool, lately enjoying an ever increasing utilization in planning and analyzing phenomena taking place at the national economy level. Concerns actually prevailing in our country were reflected particularly in the reports regarding the methods designed for the ascertainment of the technical indexes, the use of the balance in pricing and in the directing of the price policy, the use of the balance in view of determining the gross output at the economic branch level, the development of a dynamic model for the balance of relationships among the economic branches.

A great number of reports presented at the symposium headed "Economic applications of operations research" dealt with topics related to the use of mathematical techniques in ascertaining the optimal path for the progress of specific industrial branches and for the optimal way of turning to account available resources (raw materials, production capacities, manpower), in investment optimization, a.s.f.).

Over sixty papers were submitted during the symposium, giving rise to lively and highly interesting debates, with a lofty scientific level. Many reports dealt with the specific appli-

cations of operations research in the various economic areas such as electronics, transportation, goods turnover, energetics, agriculture (irrigations, vine growing, a.s.f.), building activities, mechanical engineering, mining-geology, light and food industries, exporting, a.s.f.

Moreover, the reports tackled some problems regarding the optimal way for carrying out such economic activities as: work standardization, new products assimilation, selection of personnel, a.s.f., as well as problems dealing with the optimization of some indexes or parameters of production activities (rhythmicity, resource utilization, labour productivity, quality, a.s.f.).

On the agenda of this symposium was also included a considerable number of theoretic subjects, out of which we can cite the application of the theory of graphs to the survey of social phenomena, the development of a stochastic programming model designed for the establishment of the currency policy, a new variant of the lexicographical algorithm for the integer solution of programs , the use of the utility theory in solving some linear programming problems with multiple optimum criteria.

The third symposium, headed "Informatics, algorithms and programming systems" discussed problems dealing with computer programming in view of solving economic problems and, on the whole, with software development.

Reports submitted at this symposium focussed particularly on problems involved in the basic software development — a prerequisite for extending the automation of programming as much as possible and for the most effective utilization of computation equipment to full capacity — as well as on the development of a large library of practical programs. Particularly conspicuous, as to the subject matter and to the way it was discussed, were the reports referring to techniques used in checking the translating device of an ALGOL 60 software, to the inversion of a balance matrix of the 81-st order, by means of a NEAC 1240 computer, on the occasion of using informatics in financial and banking activities.

The papers presented at the symposium headed "Utilization of computers in economy" were characterized by their marked practical features. They referred to a great variety of problems, beginning with research on the introduction of computation systems in economic organizations activities and ending with an analysis of the psychological implications of computer utilization in production management. As an example, we can cite the development of specific solutions to numerous problems, such as the optimal management of storehouse through simulation techniques, the mechanographical processing of data pertaining to the management of supplies, the booking of tickets, rooms and services at the National Travel Office through an automatic computation system, automation of wage calculations at enterprises co-ordinated through the Ministry of Petroleum, as well as production programming at the spare parts shop in the industrial state company Electro-Banat. All practical solutions suggested provide a high efficiency in the activities of the industrial units and institutions for which they were developed.

Taking into account the high degree of effectiveness and operating efficiency in exchanging ideas and information during the "round table" debates, the organizers of this scientific session availed themselves of this opportunity in order to promote this sort of discussions concentrating on four themes, namely: the training of economists, the part played by modern information processing methods in the investigation of economic and social problems, computation systems and programming methods, modelling and simulation techniques.

The thematic structuring of the proceedings and debates which took place during the symposiums and "round table" discussions, reflecting the basic concerns in the field of economic computation and economic cybernetics, allow some important conclusions to be drawn and contributing to the future trends of research undertaken at the Centre. These conclusions were pointed out in the closing speech of the session proceedings, pronounced by eng. Ştefan Bîrlea, first Vice-President of the National Council of Scientific Research.

A first development trend of research is the modelling of macroeconomic processes and the application of simulation techniques in the economic field. Closely connected with this problem, and at the same time as one of its particular aspects, the need has been emphasized of extending the research on the inter-branch link balance to the field of planning practice.

The problems tackled by research workers in the area of operations research, such as mathematical programming, optimization theory, graph theory and inventory theory, are considered to be in full accordance with the production requirements.

As to the field of computer utilization and programming, it is necessary for us to comply with the trend evidenced on a world scale, of developing software; furthemore, it will be necessary to increase the efforts for operating computers through the telecontrol systems of manage-

ment and computation, in view of increasing their economic efficiency, of providing the most effective utilization of rapid performing computers.

Once more, the proceedings of the scientific session were a proof of the efforts made in Romania for a widespread promotion of modern computation techniques and economic cybernetics, for a sound guidance of the activities carried on at the Centre of Economic Computation and Economic Cybernetics with respect to the theoretical progress of economic computation and economic cybernetics, as well as to the application of methods and techniques made available for the management and organization of work in the industrial units, the economic branches and the entire national economy.

R. STROE