Original article

Economic and mathematical models for analysis of complex systems in the economy based on generalized Samuelson-Hicks equations

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Abstract. The work is devoted to the issues of construction, implementation, as well as the application of economic and mathematical models for the study of processes in the regional economy. The possibilities of a long-term analysis of the regional economy within the framework of the Samuelson-Hicks model using a two-point boundary value problem, the point of which is to solve the boundary value problem by the method of twice solving the Cauchy problem in combination with the sweep method, are presented. The method of invariant immersion is proposed to improve the efficiency of the analysis of regional economies, the point of which is to solve two-point boundary value problems by reducing them to the system of Cauchy problems. The length of the time interval of the solving problem is the immersion parameter in constructing solutions to systems of Cauchy problems.

Keywords: macroeconomics, generalized equations, two-point boundary value problem, invariant immersion method, differential process immersion method, Samuelson-Hicks model

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