



## Empirical study regarding the usage of the Monte Carlo method in the analysis of global risk

Marilena MIRONIUC, Ioan-Bogdan ROBU, Mihaela-Alina ROBU - "Alexandru Ioan Cuza"  
University, Iași

Risk is a natural component of the social and economic life, which originates from multiple causes and takes on extremely various shapes. In parallel with the progress of the process of globalization, with the promotion of the new technologies, with the increase of competitiveness on the capital market, we witnessed an unprecedented diversification of the risk and uncertainty situations in the business world. At the same time, numerous specialists in the field of finances, financial analysis, management, and applied statistics, have become concerned with drawing integrated risk analysis, monitoring and eliminating models.

This paper aims at founding a mathematical model of analysis of the global risk of organizations, based on the study of the correlations established between a set of variables (economical-financial indicators) able to characterize the causes of the modifications occurred in the exploitation and financial activities of the organization, which may be perceived as symptoms of risks. This way, a useful instrument will be drawn for organizational management, for controlling risk dynamics, preventing and limiting the risk factors, and at the same time an indispensable instrument for the auditor, for obtaining audit proofs regarding the (non-)compliance with the principle of the continuity of the audited activities. The design of this model implies a study of the financial statements belonging to a sample made up of 80 enterprises quoted in the Stock Exchange of Bucharest. The model will be tested using a sensitivity analysis, through the Monte Carlo method. The methodology of the sensitivity analysis recommends formulating alternative scenarios, simulating the effects of the modification of certain critical variables in relation to the scenarios initially drawn, on the variation of the results of the company (global risk). In order to perform the regression analyses, the multiple correlations, and the simulation implied by the foundation of the model, the statistical instrument SPSS 15.0 and software Oracle Crystal Ball will be used.