Consensus Reaching Process and False Consensus Effect in a Problem of Portfolio Selection

Authors : Viviana Ventre, Giacomo Di Tollo, Roberta Martino

Abstract : The portfolio selection problem includes the evaluation of many criteria that are difficult to compare directly and is characterized by uncertain elements. The portfolio selection problem can be modeled as a group decision problem in which several experts are invited to present their assessment. In this context, it is important to study and analyze the process of reaching a consensus among group members. Indeed, due to the various diversities among experts, reaching consensus is not necessarily always simple and easily achievable. Moreover, the concept of consensus is accompanied by the concept of false consensus, which is particularly interesting in the dynamics of group decision-making processes. False consensus can alter the evaluation and selection phase of the alternative and is the consequence of the decision maker's inability to recognize that his preferences are conditioned by subjective structures. The present work aims to investigate the dynamics of consensus attainment in a group decision problem in which equivalent portfolios are proposed. In particular, the study aims to analyze the impact of the subjective structure of the decision-maker during the evaluation and selection phase of the alternatives. Therefore, the experimental framework is divided into three phases. In the first phase, experts are sent to evaluate the characteristics of all portfolios individually, without peer comparison, arriving independently at the selection of the preferred portfolio. The experts' evaluations are used to obtain individual Analytical Hierarchical Processes that define the weight that each expert gives to all criteria with respect to the proposed alternatives. This step provides insight into how the decision maker's decision process develops, step by step, from goal analysis to alternative selection. The second phase includes the description of the decision maker's state through Markov chains. In fact, the individual weights obtained in the first phase can be reviewed and described as transition weights from one state to another. Thus, with the construction of the individual transition matrices, the possible next state of the expert is determined from the individual weights at the end of the first phase. Finally, the experts meet, and the process of reaching consensus is analyzed by considering the single individual state obtained at the previous stage and the false consensus bias. The work contributes to the study of the impact of subjective structures, quantified through the Analytical Hierarchical Process, and how they combine with the false consensus bias in group decision-making dynamics and the consensus reaching process in problems involving the selection of equivalent portfolios.

Keywords : analytical hierarchical process, consensus building, false consensus effect, markov chains, portfolio selection problem
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