The culture of risk in Romanian society

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TABLE OF CONTENTS

ABSTRACT

Culture is defined as a group of activities and behavior patterns specific to a given social group, transmitted through education. Risk as commonly used in the economic field is understood that quantifies the possibility of achievement of a task. The culture of risk can be defined as the rules and traditions governing the behavior of individuals within a community that determines how they identify, understand and act on the basis of the risks they face and take.

The originality of this aproach consists in treating and evaluating the mathematical concept of risk. Specifically, modelling techniques and risk measurement based on interval analysis and concept of entropy are used, and the resulting optimization model is more realistic. The proposed project lies on the border between economics and the science of information technology in order to achive the objectives of the project, theories and concepts from two different sciences are used , mathematics and socioeconomics. Although working with different concepts and havinge different research paradigms, the two linked sciences make possible the development of models of the decision-making processes. The research results are disseminated through publication in journals and presentations at international conferences.

Chapter 1 (**Optimization and entropy**):

- an algorithm is described that can assess the cultural force operating in an area using measures of entropy and this algorithm is applied to a particular case, in order to assess how representative the printed books and booklets, entering the Legal National Library are.
- the possible modalities for financial investment are described and analyzed
- fundamental concepts which operate in Portfolio Theory are presented:
- the main factors occurring in mean-risk optimization models are analyzed
- an empirical and axiomatic approach to the entropy of a portfolio is presented
- two new portfolio optimization models using Shannon entropy are presented

Chapter 2 (**Interval Analysis**):

- notions and concepts of interval analysis: arithmetic interval (interval numbers, operations with interval numbers , interval inequalities), interval random variables are presented
- an example (Portfolio performance modeling using interval analysis) is examined, how showing the interval analysis can be used to model different sets of financial data; also introduced is an algorithm that can estabilish the profitability of a portfolio using interval analysis
- an interval linear programming model (ILP) is presented and is shown how it can effectively solve this kind of problem

Chapter 3 (**Optimization model using interval analysis**) a portfolio optimization model using interval analysis is developed.

- the mathematical model of a multiperiod optimization problem for optimal portfolio selection, without considering transaction costs is presented

- a possible solution to this problem is analysed.

- a case study concerning the Bucharest Stock Exchange is presented

Chapter 4 (**Final conclusions**). A summary of the conclusions of the preceding chapters is given

A fruitful area for future research would be to further develop the concepts applied to portfolio optimization and to further analyse the relationship between culture and entropy

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