

A possibilistic approach to risk aversion

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Possibility theory was initiated by Zadeh in 1978 as an alternative to probability theory. Probability theory is not efficient in the study of those uncertainty situations in which phenomena occur with a small frequency. In such cases it is preferable to apply techniques offered by possibility theory. In foundation of possibility theory one started on a paralel line with probability theory. Random variables were raplaced by possibilistic distributions and for probabilistic indicators (mean value, variance, covariance,etc.) correspondents in possibilistic context were looked for. The fuzzy numbers constitute the most important class of possibilistic indicators [1]. Risk aversion of an agent faced with an uncertainty situation is a topic studied usually with probabilistic methods. In this paper we treat the risk aversion by possibilistic means. In a mathematical context formed by a utility function, a fuzzy number and a weighting function three concepts of possibilistic risk premium are defined. For these notions of possibilistic risk premium computation formulae are proved in terms of Arrow–Pratt index and some possibilistic variances studied previously. The main result is a possibilistic version of Pratt’s theorem [3]. Thus we obtain a method for comparing risk aversion of possibilistic risk of two agents.

Keywords: possibilistic indicators, possibilistic risk premium, possibilistic Pratt theorem

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