Maciej Sablik
Silesian University, Katowice
E-mail: maciej.sablik@us.edu.pl

Additivity of insurance premium

Let u denote a utility function, X be a random loss, $H(X)$ — a premium paid in case of loss, and, finally, let w denote the initial wealth of insurer. Then the generalized zero utility principle under the rank-dependent utility model may be expressed as the following equation

$$u(w) = E_g(u(w + H(X) - X)), \tag{1}$$

where $g : [0,1] \to [0,1]$ is a so called probability distortion function, and E_g denotes the Choquet integral (see [1]). Similarly, if g and h are probability distortion functions, one may consider the equation

$$u(w) = E_{g,h}(u(w + H(X) - X)), \tag{2}$$

where this time $E_{g,h}$ denotes the so called generalized Choquet integral (see [3]).

We ask for utility and probability distortion functions satisfying (1) and (2) if additionally the additivity of H for independent risks is assumed. We discuss the regularity assumptions admitted by the authors of [1] and [3].

References

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