



Concave Distortion Semigroups

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The problem behind this paper is the proper measurement of the degree of quality/acceptability/distance to arbitrage of trades. We are narrowing the class of coherent acceptability indices introduced by Cherny and Madan (2007) by imposing an additional mathematical property. For this, we introduce the notion of a concave distortion semigroup as a family $(\Psi_t)_{t \geq 0}$ of concave increasing functions $[0,1] \rightarrow [0,1]$ satisfying the semigroup property $\Psi_s \circ \Psi_t = \Psi_{s+t}, \quad s, t \geq 0$. The goal of the paper is the investigation of these semigroups with regard to the following aspects: representation of distortion semigroups; properties of distortion semigroups desirable from the economical or mathematical perspective; determining which concave distortions belong to some distortion semigroup.

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