

Risk Measures and Asset Pricing Models with Wang Transforms under Flexible Skew-generalized Distributed Settings

Weizhong Tian, Tonghui Wang
Department of Mathematics Sciences,
New Mexico State University, New Mexico, USA
xjlaojiu@nmsu.edu, twang@nmsu.edu

Abstract

To provide incentive for active risk managements, tail-preserving and coherent distortion risk measures are needed in the actuarial and financial fields. In this paper we propose extended versions of Wang transform using two different forms of flexible skew-generalized distribution functions and two different forms of flexible skew-generalized t -distributions with normal kernel and cauchy kernel. We proved that the flexible skew-generalized risk measures in Choquet integral form with normal kernel and cauchy kernel are coherent and the degree-two tail-preserving for usual bi-atomic risk distributions. Some properties of flexible skew-generalized t distortion functions with normal kernel and cauchy kernel and their corresponding risk measures are studied. Also under some plausible conditions, the portfolio optimization is explored for the capital asset pricing model(CAPM) where the pricing strategy uses the generalized Wang transform as the distortion functions.

Keywords: wang-transform, flexible skew-generalized normal distribution,cauchy distribution, distortion function.