

Linking risk management under expected shortfall to loss-averse behavior (joint work with Thai Nguyen)

An Chen

University of Ulm

an.chen@uni-ulm.de

We introduce and solve an optimal asset allocation problem under a weighted expected shortfall (WES) constraint, which contains the risk management problem under an expected shortfall constraint of Basak and Shapiro (2001) as a special case. Furthermore, we link our risk management problem under the WES constraint to an optimal asset allocation with a multiple-reference-based preference (MRBP) and find that the optimal wealth with MRBP owns the same form as the optimal solution under the WES constraint. For the degenerate case with a fixed reference level, we are able to determine the critical maximal allowed expected shortfall constraint as a function of the loss aversion parameters to achieve equivalence. In case of multiple thresholds with the same probability weights, we show that while no equivalence can be in general obtained between the WES and the MRBP solution, the optimal terminal wealth of the WES problem can be made to coincide with the MRBP terminal wealth in the most favorable and in the worst market states. More interestingly, if different probabilities can be assigned to the thresholds, the solutions of the two problems can be made identical.