NIUSHAN GAO, Ryerson University

A general representation theory for risk measures

For a coherent risk measure $\rho : L^\infty \to \mathbb{R}$, Delbaen (2002) proved that ρ can be represented as the worst expectation over a class of probabilities whenever it has the Fatou property. Lately, it has been asked whether Delbaen's representation theorem holds on more general model spaces containing unbounded positions, specifically, Orlicz spaces. In this talk, we present a comprehensive investigation on this problem. We characterize the Orlicz spaces over which the theorem holds, which shows, in particular, that the theorem fails on a fairly large class of Orlicz spaces, countering to the general positive belief. Next, we show that the theorem holds on general Orlicz spaces if the risk measure possess additional properties, e.g., law-invariance or surplus-invariance.

This talk is based on joint papers with D. Leung, C. Munari, F. Xanthos.