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Liquidity and coherent risk measures

Abstract

We present an hypotheses-free formalism for marking-to-market a portfolio in general illiquid markets. In this formalism coherent measures of risk turn out to be perfectly appropriate to measure general portfolio risk including liquidity risk. Coherent Risk maps and Value maps, defined on the space of portfolios, turn out to be convex and concave respectively, displaying two distinct faces of the diversification principle, namely the traditional correlation benefit and a newly observed granularity benefit. We show that the optimization problem implicit in the definition of the value of a portfolio is always a convex problem, ensuring straightforward industrial applicability of the method