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Two optimal pricing measures: A comparative study

In this talk, we will discuss two optimal martingale measures: The minimal Hellinger martingale measure of order q ($\mathrm{MHM}(q)$ measure hereafter) and the q-optimal martingale measure, for any q and any semimartingale market model.

We will explain how these two optimal martingale measures are obtained. Then we conduct our comparison for these two martingale measures in two ways. The first comparison deals with comparing 'physically' the two optimal martingale measures. Precisely, in this case, we show that the two optimal martingale measures coincide in the case of Levy market models with known horizon, while they differ in general. We also provide necessary and sufficient conditions for the two optimal martingale measures to coincide in a general framework. The second comparison addresses the question whether there exists a model for which the $\mathrm{MHM}(q)$ measure of the underlying model is the q-optimal martingale measure, and vice-versa. This last comparison has a great impact in analysing uncertainty models. Finally, from the very practical point of view, we analyze the $\mathrm{MHM}(q)$ measure for the case of discrete-time market model.