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Martingale Schrödinger bridges

In a two-period financial market where a stock is traded dynamically and European options at maturity are traded statically, we study the so-called martingale Schrödinger bridge Q*; that is, the minimal-entropy martingale measure among all models calibrated to option prices. This minimization is shown to be in duality with an exponential utility maximization over semistatic portfolios. Under a technical condition on the physical measure P, we show that an optimal portfolio exists and provides an explicit solution for Q*. This result overcomes the remarkable issue of non-closedness of semistatic strategies discovered by Acciaio, Larsson and Schachermayer.

This talk is based on joint work with Marcel Nutz and Long Zhao.