Portfolio Optimisation under Partial Information

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We consider a stock market model where prices satisfy a stochastic differential equation. The instantaneous rates of return are modeled as a continuous time Markov chain with finitely many states. For the volatility we consider different models: The constant elasticity of variance model (level dependent), the Hobson-Rogers model (based on the history of the prices), and the generalised Hobson-Rogers model. The latter accounts for realistic smiles. The investor's objective is to maximise the expected utility of the terminal wealth under partial information; partial information means that his investment decisions are based on the knowledge of the stock prices only. We derive explicit representations of the optimal trading strategy using Malliavin calculus. We compare the different volatility models and also take the case of constant volatility into consideration.

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