

Assessing volatility and model risks in optimal execution

Max Souza¹

¹ Universidade Federal Fluminense

We analyze the optimal liquidation problem considering stochastic volatility and model uncertainty. As a reference model, we take an extension of the classical continuous-time Almgren-Chriss model, assuming that the bid price of the traded asset has a volatility driven by a scalar Markov diffusion. In addition, we also assume that the agent is averse to model misspecification. We discuss the main qualitative changes in the optimal strategy obtained under these assumptions, and compare it with classical results. We also consider two different asymptotic expansions that lead to closed-form approximations of the optimal liquidation strategy. The first expansion explores the case of an agent that is weakly ambiguous with respect to the reference model. The second one follows the Taylor series expansion method, allowing us to expand optimal solutions with respect to the state variable corresponding to the volatility driver process. This is joint work with Yuri Thamsten.