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Financial markets with a large trader

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Abstract

We construct a large trader model using tools from nonlinear stochastic integration theory and an impact function. It encompasses many well-known models from the literature. In particular, the model allows price changes to depend on the size as well as on the speed and timing of the large trader's transactions. Moreover, a volume impact limit order book can be studied in this framework. Relaxing a condition about existence of a universal martingale measure governing all resulting small trader models, we can show absence of arbitrage for the small trader under mild conditions. Furthermore, a case study on utility maximization from terminal wealth highlights new phenomena that can arise in our framework. Finally, an outlook on further research provides insights on (no) arbitrage opportunities for the large trader and how different levels of information may affect our analysis.

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