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The two square root laws of market impact: rough volatility and the role of sophisticated market participants

The goal of this work is to disentangle the roles of volume and participation rate in the price response of the market to a sequence of orders. To do so, we use an approach where price dynamics are derived from the order flow via no arbitrage constraints. We also introduce in the model sophisticated market participants having superior abilities to analyse market dynamics. Our results lead to two square root laws of market impact, with respect to executed volume and with respect to participation rate. We also make connection with the rough behaviour of the volatility.
This is joint work with Bruno Durin and Grégoire Szymanski.