Smart Markets for Financial Securities: From Block to Flow Trading

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Abstract

We propose a new market design for trading financial securities to remedy fundamental flaws in existing markets. Unifying the frequent batch auctions of Budish-Cramton-Shim 2015 and the continuous scaled limit orders of Kyle and Lee 2017, the new design clears the market periodically and allows traders to directly express preferences in a simple, yet powerful way. Our solution technique is computationally efficient and readily handles many assets simultaneously. Traders can submit one order to trade an entire portfolio. An order expresses piecewise-linear demands for securities together with linear constraints. Demands are expressed as flows—a rate of trade in shares/minute. Market clearing involves aggregating orders to form a convex quadratic program, which maximizes gains from trade. Incorporating advances in cryptography of Parkes et al. 2015, the market keeps the investors' preferences private, while making it transparent that the procedures are fair and faithfully executed.

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