

ENDOGENOUS FORMATION OF LIMIT ORDER BOOKS

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ABSTRACT. In this talk, I will present a modeling framework in which the shape and dynamics of a Limit Order Book (LOB) arise endogenously from an equilibrium between multiple market participants (agents). On the one hand, the new framework captures very closely the true, micro-level, mechanics of an auction-style exchange. On the other hand, it uses the standard abstractions of games with continuum of players (in particular, the Mean Field Game theory) to obtain a tractable macro-level description of the LOB. In the first part of my talk, I will use the proposed modeling framework in discrete time to analyze the effects of trading frequency on market liquidity in a very general setting. In particular, I will show that the higher trading frequency increases market efficiency if the agents choose to provide liquidity in equilibrium. However, the higher trading frequency also makes markets more fragile, in the following sense: in a high-frequency trading regime, the agents choose to provide liquidity in equilibrium if and only if they are market-neutral (i.e. their beliefs satisfy certain martingale property). In the second part of my talk, I will focus on how the market participants form their beliefs. In particular, I will present a continuous-time extension of our modeling framework and the associated systems of reflected BSDE's.