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Optimal investment in financial markets with different liquidity effects

CHRISTOPH KÜHN (GOETHE-UNIVERSITY FRANKFURT)

In an illiquid financial market trades of a large investor can move market prices quite significantly. In the last years different models have been suggested to capture the interdependency of the evolution of the asset price and the dynamic trading strategy of a large investor in the asset. Roughly speaking, there are two competing approaches in the literature. In Çetin, Jarrow, Protter (2004), Rogers, Singh (2006) and others, a transaction of a large trader only has a short-term price impact and the asset price jumps back to its previous level. By contrast, in Bank, Baum (2004), Esser, Mönch (2002), Frey, Stremme (1997) and Platen, Schweizer (1998) the market price stays at the new level after a transaction of the large investor.

We give a new microeconomic motivation of different illiquid market models and propose a continuous-time model which unifies both liquidity effects. The continuous-time self-financing condition for this model is obtained as a limit from so-called simple strategies. We analyze the large investor's utility maximization problem for utility functions which are finite on the whole real line and characterize the optimal strategy by a marginal utility property generalizing a well-known relationship in frictionless markets.