Discussion of:

"Liquidity and the Marginal Value of Information"

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Outline

The Set Up

- Back's (1992) version of Kyle's (1985) insider trading model.

Market: one risky asset with final value $V \sim F$, where F is common knowledge, V common knowledge only at $t = T$

Agents:
1. Market maker, observes total demand $dy(t) \rightarrow$ information $\mathcal{F}_M(t)$
2. Uninformed/liquidity traders $\rightarrow$ exogenous demand $\sigma_u dz(t)$
3. Insider, knows $V \rightarrow$ endogenous demand $q(t)dt$, information $\mathcal{F}_I(t) = \mathcal{F}_M(t) \vee \sigma\{V\}$

Utilities: risk neutral

Note: $\mathcal{F}_M(t)$ and $\mathcal{F}_I(t)$ are discontinuous

Key Findings

1. uniqueness of Markovian (spell it out!) equilibrium

Note: non Markovian counter examples available

2. the equilibrium trading strategy has martingale property

Remarks:
- i) risk neutrality matters $\rightarrow$ e.g. price mean reversion if MM is risk averse (Danilova and Cetin (2012))
- ii) paper's heuristic argument ("drift would improve MM estimate of V") is not the full story
- iii) due to drift-less uninformed demand?

3. neat characterisation of the liquidity/value of information link (the shadow value of information is proportional to Kyle's price impact parameter).

Comments

- a brave paper! ... and (conditional on clean up) an important one for the literature.

But: currently written too loosely e.g.:

  - should spell out assumptions clearly and ex-ante
  - HJB without verification Thm
  - some (fixable) circular argument (e.g. check Karatzas and Shreve (1998) Thm 4.36)
  - some unproven/uncited bits ... but that seem to makes sense nevertheless (e.g. $y(t)$ is BM in MM's filtration).
  - perturbation of a continuous processes (y, q) changes all future path (and filtration generated)
  - inappropriate use of Radon-Nikodym theorem (but they don't really need it)
  - some loose citation

Baseline: a diamond in the rough

A Suggestion

- Beck (1992) derives an upper bound for your value function

$\Rightarrow$ probably the hardest bit for applying viscosity solution... and uniqueness comes almost as a freebie.