Risk seekers

Noise, trade and the rationalizing effect of market impact on convex preferences

Efstathios (Stathi) Avdis
University of Alberta
The paper in a nutshell

Question and context
- Can we rationalize market inefficiency?

How it works
- market impact
  - risk seeking

Ideas for empiricists
- What we need, what we get
Can we rationalize market inefficiency?

Market inefficiency appears inconsistent with rationality
- Inefficiency, trade, and noise are a joint problem

Obstacle: with “standard” risk preferences, if everyone is rational, there is no equilibrium! (Tirole, 1982; Milgrom & Stokey, 1982)

Existing theories & a distinction
- Behavioral ideas:
  - noise traders
  - heterogenous beliefs
- Exogenous sources:
  - stochastic supply
  - hedging
  - random endowments
Rational expectations with risk-seeking attitudes: assumptions

A risky asset with price $P$, dividend $D \sim \mathcal{N}(0, \tau_D^{-1})$

N traders, where each trader $i$ has

- utility $e^{-\delta \pi}$ over profit $\pi$, with risk aversion $\delta < 0$
- private signal $s_i = D + \epsilon_i$, with $\epsilon_i \sim \mathcal{N}(0, \tau_i^{-1})$ i.i.d. over $i$
- demand function $X_i$, linear in signals

\[ X_i = \beta_i s_i - \gamma_i P \]
Rational expectations with risk-seeking attitudes: results

Price linear in signals

\[ P = \lambda \sum_n \beta_n s_n = \left( \lambda \sum_n \beta_n \right) D + \text{noise} \]

Trading intensity

\[ \beta_i = \frac{\tau_i}{\left(2 - \frac{1}{N}\right) \rho + \delta} \]

where

\[ \rho = \frac{\tau_D}{1 - \sum_n \beta_n} \frac{N}{N - 1} \]

- \( \rho = -\delta \), so more risk seeking \( \Rightarrow \) more market impact
- 2\text{nd} ord. cond. \( \propto \delta < 0 \), so risk seeking \( \Rightarrow \) effectively risk-averse

Our goal: understanding this picture

• higher market impact \( \uparrow \) higher risk appetite
• lower aggregate \( \Sigma_n \beta_n \) \( \downarrow \) lower risk appetite

Attitude towards risk: aversion / neutrality / seeking

Risk “appetite” \( \rho \)

Rational expectations with risk-seeking attitudes: results

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Attitude towards risk: aversion / neutrality / seeking
Empirical relevance

Isn’t risk seeking “weird”?

1. Cheaper information ⇒ more liquid prices
   • Not shared by other models (noise traders etc.)
2. Higher risk appetite ⇒ noisier, thus riskier prices
3. Hirschleifer effect
   • more information ⇒ everyone is worse off
     • information “destroys” insurance
   • refinement: with risk seeking, more information ⇒ everyone is better off
Summary

• A fully rational theory of market inefficiency

• More risk seeking ⇒ more market impact
  ↓
  traders “pull the brake” harder

• Ideas for empiricists