Risk seekers

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

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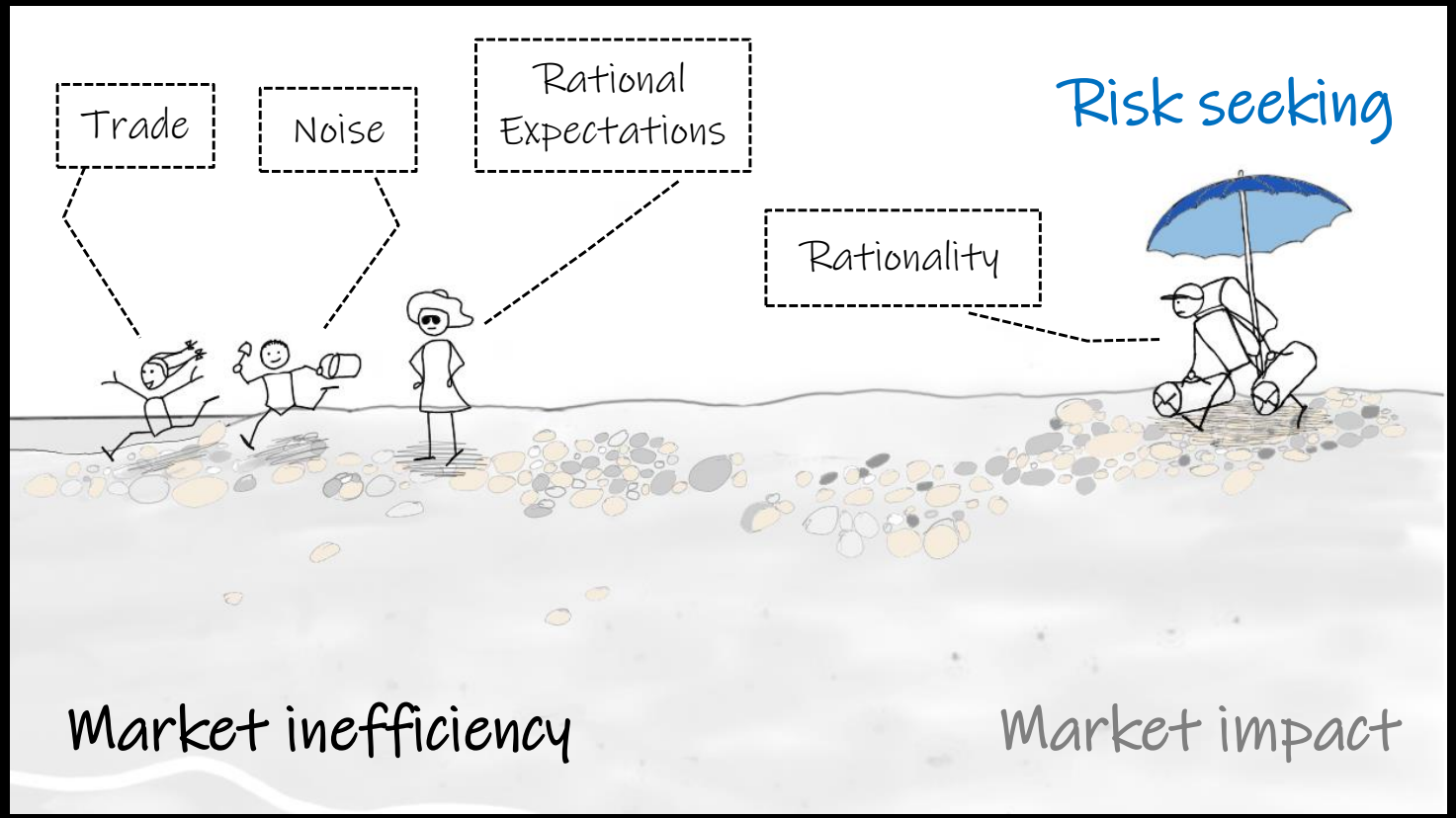
The paper in a nutshell



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

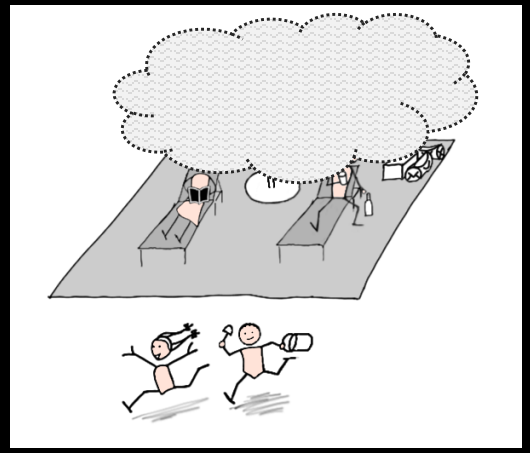
- Inefficiency, trade, and noise are a joint problem

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

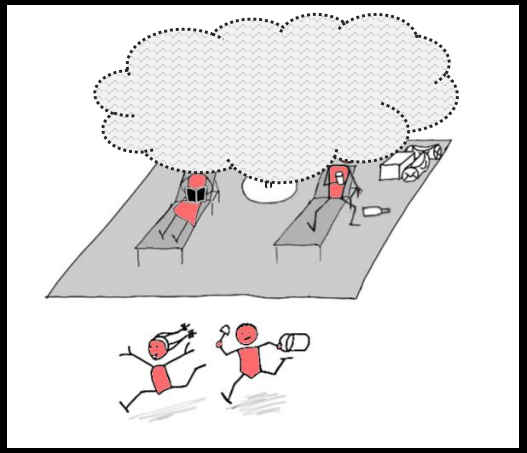
Existing theories & a distinction

- *Behavioral* ideas:
  - noise traders
  - heterogenous beliefs
- *Exogenous* sources:
  - stochastic supply
  - hedging
  - random endowments

With risk seeking



Without risk seeking



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

$$X_i = \beta_i s_i - \gamma_i P$$

Trading intensity (-ies)

How it works

Rational expectations with risk-seeking attitudes: results

Price linear in signals

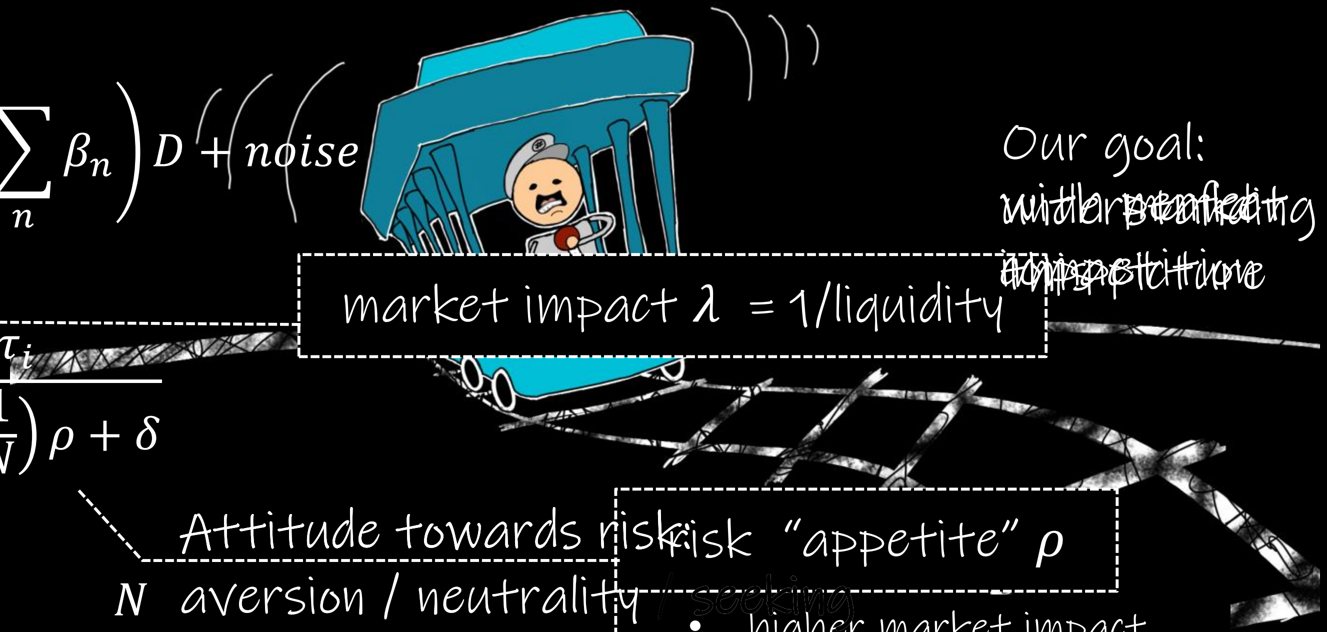
$$P = \lambda \sum_n \beta_n s_n = \left(\lambda \sum_n \beta_n\right) D + noise$$

Trading intensity

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

where

$$\rho = \frac{\tau_D}{\frac{1}{\lambda} - \sum_n \beta_n} \frac{N}{N-1}$$



Our goal:

market impact λ = 1/liquidity

Attitude towards risk: aversion / neutrality / seeking

risk "appetite" ρ

- higher market impact ⇕ higher risk appetite
- lower aggregate $\sum_n \beta_n$ ⇓ lower risk appetite

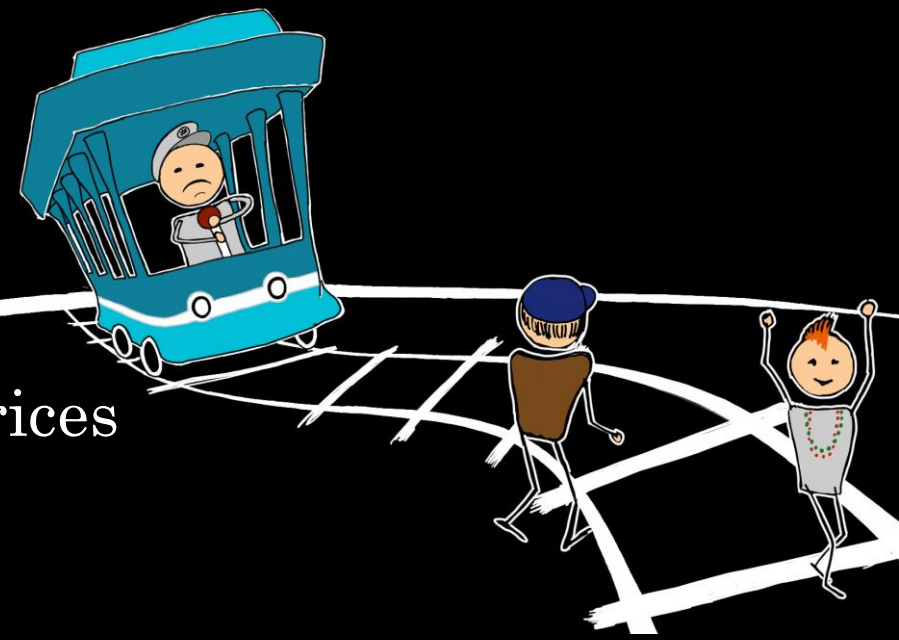
- $\boldsymbol{\rho = -\delta}$, so more risk seeking ⇒ more market impact
- 2^{nd} ord. cond. ∝ $\delta < 0$, so risk seeking ⇝ effectively risk-averse

Empirical relevance

1. Cheaper information ⇒ more liquid prices
   - Not shared by other models (noise traders etc.)

Isn't risk seeking "weird"?

2. Higher risk appetite ⇒ cheaper, 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

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  traders “pull the brake” harder

- Ideas for empiricists