

Disclosing to informed traders

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Overview

Question How does voluntary disclosure impact prices when investors are informed?

This paper Depends on the frictions behind non-disclosure.

Results

1. Characterization of unique threshold equilibrium
2. Generally, there is mis-valuation.
 - ▶ Costly disclosure \Rightarrow under-valuation
 - ▶ Probabilistic information \Rightarrow over-valuation
3. Mandatory disclosure may crowd-in or crowd-out voluntary disclosure

Environment

- ▶ 1 firm with value a random payoff $\tilde{v} \sim N(0, \sigma_v^2)$
- ▶ Continuum of risk averse investors with private signals $\tilde{s}_i = \tilde{v} + \tilde{\varepsilon}_i$
- ▶ Noise traders with demand $\tilde{z} \sim N(0, \sigma_z^2)$
- ▶ Risk neutral manager
 - ▶ informed with probability p
 - ▶ if informed, can disclose information voluntarily at a cost c

Equilibrium price

- ▶ With disclosure, no uncertainty

$$P_D = v$$

- ▶ Without disclosure

$$P_{ND} = G(v + \beta z; T)$$

- ▶ G strictly increasing and smooth and known by investors
 - ▶ Price is non-linear but signal contained in price is linear in $\tilde{v} \Rightarrow$ tractability
- ▶ 2 sources of uncertainty
 - ▶ disclosure choice: no disclosure is bad news \Rightarrow pushes valuation down
 - ▶ whether manager is informed

1. Threshold equilibrium

- ▶ If informed, the manager discloses information if

$$\Pi_D = v - c - \mathbb{E}[P_{ND} | \tilde{v} = v] \geq 0$$

- ▶ A threshold equilibrium exists if the manager has more incentives to disclose as v increases
- ▶ If $p = 1$, ND reveals $v < T$ and reduces the posterior variance relative to $p = 0$

$$\Rightarrow \frac{\partial \Pi_D}{\partial v} > 0$$

- ▶ If $p < 1$, additional source of uncertainty: whether manager is informed. Can have

$$\frac{\partial \Pi_D}{\partial v} < 0$$

- ▶ Threshold equilibrium exists if $p = 1$ or the precision of investors' signals is low enough

2. Firm valuation

- ▶ In general

$$\mathbb{E} [P_{ND}|ND] \neq \mathbb{E} [\tilde{v}|ND]$$

- ▶ Two benchmarks
 - ▶ costly disclosure $c > 0$ and $p = 1 \Rightarrow$ under valuation
 - ▶ ND bounds the value of the firm puts downward pressure on price
 - ▶ probabilistic information $c = 0$ and $p < 1 \Rightarrow$ can lead to over valuation
 - ▶ payoffs can exhibit positive skewness (noisy private information)

3. Public signal

- ▶ Noisy public signal about v before disclosure decision
- ▶ Public information can *crowd-in* voluntary disclosure
- ▶ Three effects of more public info
 - ▶ less bad news inferred from ND, increases P_{ND} (Verrechia 1990)
 - ▶ valuation channel: reduces misvaluation
 - ▶ more disclosure if over-valuation
 - ▶ less disclosure is under-valuation
 - ▶ substitution channel: shift from private to public info

Comments/Suggestions

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 - ▶ Manager does not affect value
 - ▶ Feedback effect: managers learning from prices?

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5. Applications/Examples!