Discussion of:

Public Trading and Private Incentives

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What the Paper Does:

The model formalizes the following story:

- A large blockholder/insider may be forced to liquidate a large position at some point in time.
  - There is an adverse selection problem here, because the insider is generally informed about the firm value.
- Assume that this manager also has the opportunity to spend money to improve the expected future cash flows of the firm.
- If it is possible that the insider will recieve the liquidity shock before the results of his expenditures are known. This will reduce the equilibrium effort he expends, and the average price he receives on liquidating the shares
  - This is generally a combination of an adverse selection and moral hazard problem.
  - This simplified model turns it into a pure moral hazard problem by making the liquidity shock observable.
- However, if a Speculator gathers information about final value, and incorporates this information into the price by the time that the insider's liquidity shock arrives, the moral hazard problem can be ameliorated.
  - Also, if the Speculator's information is correlated with the Insider's, this can alleviate the asymmetric information problem as well.

The Model

Key Agents:

- A Firm Insider
  - The Insider can be viewed as an entrepeneur, venture capitalist who monitors/advises, or simply a financier who monitors.
  - Key thing is that their effort has positive externalities for the other shareholders.
- A Speculator w/ option to observe firm value.
  - They must pay a random random price k to observe V.
  - CDF is $F(k)$.
- A Market maker.

Additional Assumptions (w.l.o.g.):

- All agents are risk-neutral
- Risk-free rate is zero.

Model Timeline

Time 0:

- $(1-\alpha)$ of firm held by Insider
  - In extensions, Insider chooses how much of firm to retain.

Time 1:

- Insider exerts effort $e = e^*$ at private cost $c(e) = e^2/2$

Time 2a:

- Firm value is realized:

$$V = \begin{cases} V_H & with\ probability\ \frac{1}{2} + \frac{e}{2} \\ V_L & with\ probability\ \frac{1}{2} - \frac{e}{2} \end{cases}$$

  - $\partial E[V]/\partial e > 0$; $\partial \sigma_V^2/\partial e < 0$
- V is revealed to Speculator if he pays a (random) cost k

Time 2b:

- Speculator submits orders $\{-d, d\}$, given observed value $\{V_L, V_H\}$
- Liquidity trader submits order $\in \{-d, d\}$ $(pr = 0.5)$
- Market maker observes orders, *not identities,* and sets prices

Time 3:

- Insider suffers full liquity shock with probability λ
- Liquidity shock is observable, so $P_3 = P_2$
  - Extensions explore unobservable liquidity shock w/ informed insider.

Time 4:

- Firm value revealed.

Market Maker Price Setting

- The Market Maker observes the Liquidity trader demand (d_L) and speculator demand (d_S), but cannot distinguish who has submitted which order.
- If the speculator does not pay k, he demands $d_S = 0$, and the MM sets P at the unconditional $E[V] = \hat{V}(e^a)$
- If the speculator does not pay k, then
  - if the MM observes $\{-d, +d\}$ or $\{+d, -d\}$ he has no information on whether V is high or low, and again sets $P = \hat{V}(e^a)$
  - if the MM observes $\{-d, -d\}$ or $\{+d, +d\}$, then he knows what the Speculator's signal was, what the final payoff is, and sets price accordingly.

	Orders		
Firm Value	d_S	d_L	Stock Price
V_L	$-d$	$-d$	V_L
V_L	$-d$	$+d$	$\hat{V}(e^a)$
V_H	$+d$	$-d$	$\hat{V}(e^a)$
V_H	$+d$	$+d$	V_H

- Thus, probability that the time 2 & 3 prices reveal information (and effort) is $1/2$ times the probability that the speculator decides to pay k for information.

Basic Model Result

Key model equation is:

$$e(p^a) = (1-\alpha)\left[1-\lambda(1-p^a)\right]\frac{\Delta V}{2}$$

- $e =$ insider's effort.
- $(1-\alpha) =$ insider's block size.
- $p^a =$ Probability stock price is informative.
- $\Delta V = v_H - V_L$

Comparative Statics:

$$\begin{array}{rcl} \frac{\partial e}{\partial(1-\alpha)} & > & 0 \\ \frac{\partial e}{\partial p^a} & > & 0 \\ \frac{\partial e}{\partial \lambda} & > & 0 \end{array}$$

- These same comparative static results apply to the equilibrium effort.
- Intuitively:
  - Liquidity shocks cause insider to reduce effort
  - Price informativeness ameliorates this liquidity effect
- Interestingly, decreasing insider holdings $(1-\alpha)$ may cause the insider to exert more effort if this also results in higher price informativeness (p^a)
  - Motivation for IPO's

Applications:

1. IPO Staging:
    - A firm does a small IPO (e.g., 5%) to establish a market for its stock, and induce speculators to enter and gather information about the security.
    - This iduces the insider to undertake more effort
        - Then, if the insider receive a later liquidity, shock they can do another issue, and results of their effort are more likely to be incorporated into the price.
2. Security Design.
    - The standard Myers pecking-order hypothesis is no longer correct.
    - A firm may want to issue more equity (rather than debt) because issuing equity induces speculators to purchase info and incorporate it into price

Issues:

1. Timing is crucial here.
    - The liquidity shock occurs after the speculator's chance to gather information.
    - After the liquidity shock, no one gathers information to decide whether to participate in the large liquidity-driven sale.
        - It seems like speculators should be able to gather some information about the firm at this point.
        - However, it is plausible that the information could not be gathered quickly, particularly if the
    - *Aside: the speculator doesn't participate in purchasing any part of the liquidity, by assumption. Should he, and should this be incorporated in what the speculator pays for information?*
2. Why one insider?
    - In Fishman and Hagerty (1989) and Hölmstrom and Tirole (1993), firms try to get many insiders gathering signals, and competing away their profits, and in the process making price more informative.
    - What would be the effect of competition among speculators here?

Effect of Payoff Variance Assumption:

- This setup results in a weird feedback:
  - Higher effort decreases payoff variance
  - This decreases the expected profit to the Speculator from buying signal and trading.
  - This in turn decreases the likelihood that the speculator will purchase the signal, which decreases the price informativeness.
- The variance assn seems to decrease the marginal return to effort at high effort levels:
  - What is the robustness of the model to changes in this assumption.