Voluntary disclosure, moral hazard and default risk

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Introduction

- Over the past two decades, more US firms voluntarily disclose non-GAAP performance metrics (Black et.al. 2018).
  - Non-GAAP *earnings guidance* is a major component
  - The SEC restricts these reports to cover *non-recurring* events
- The empirical evidence (Aniloski et.al. 2006, Beyer et.al. 2010, Black et.al. 2017; Leung and Veeman 2018) suggests that:
  - Guidance predicts analysts forecasts and short-term cash flows
  - Guidance is more frequent when firms incur losses
  - Firms that preemptively disclose losses subsequently outperform

Introduction (cont'd)

- How to reconcile these facts with voluntary disclosure models, which predict that managers withhold bad news?
- One argument is that firms worry about litigation risk (Skinner 1994, Marinovic-Varas 2016).
- We show that disclosure models can reconcile these facts once one endogenizes capital structure and compensation.
  - Financing costs $\Rightarrow$ stock (and firm) value $\Rightarrow$ disclosure incentive

Introduction (cont'd)

- Disclosure impacts the design of a firm's capital structure.
- Disclosure alleviates the financing friction (moral hazard).
  - It disentangles bad performance from mismanagement
    $\Rightarrow$ reduce financing cost $\Rightarrow$ prevent inefficient default.
- Disclosure brings an additional cost for security design.
  - The manager needs to be incentivized to disclose
    $\Rightarrow$ increase financing cost $\Rightarrow$ induce inefficient default.
- We derive novel predictions that relate disclosure, optimal capital structure and a firm's default risk.

Theoretical Contribution

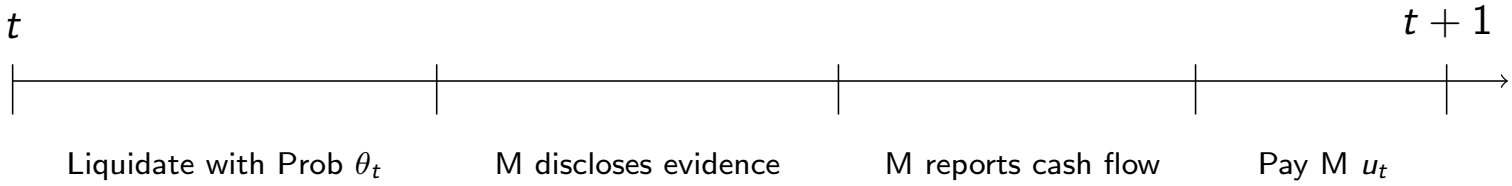
- As in Dye 1985, because they may be uninformed, managers can conceal evidence. Unraveling à la Grossman 1981 fails
- We embed the disclosure problem in the DeMarzo-Fishman 2007 dynamic agency model and derive capital structure optimally.
- We complement the work on monitoring in dynamic agency (e.g., Piskorski and Westerfield 2016, Orlov 2019), studying the case where the manager controls the information, not the principal.

Setup

- Firm produces cash flows $x_t \in \{\ell, h\}$ at date t, which are iid.
  - $h > \ell \geq 0, \quad p = Prob(x_t = h), \quad \mu = E(x_t)$
- All agents are risk-neutral with discount rate $r \in (0, 1)$.
- Conflict of interest:
  - Manager privately observes x_t and can divert $\delta = \lambda(h - \ell)$.
  - $\lambda \in (0, 1]$ represents the severity of moral hazard.
- Disclosure:
  - Manager has evidence to disclose about x_t with probability $\pi \in [0, 1)$, at each date t.
  - Evidence is perfectly revealing (for this paper).
  - Evidence cannot be fabricated but it can be concealed.

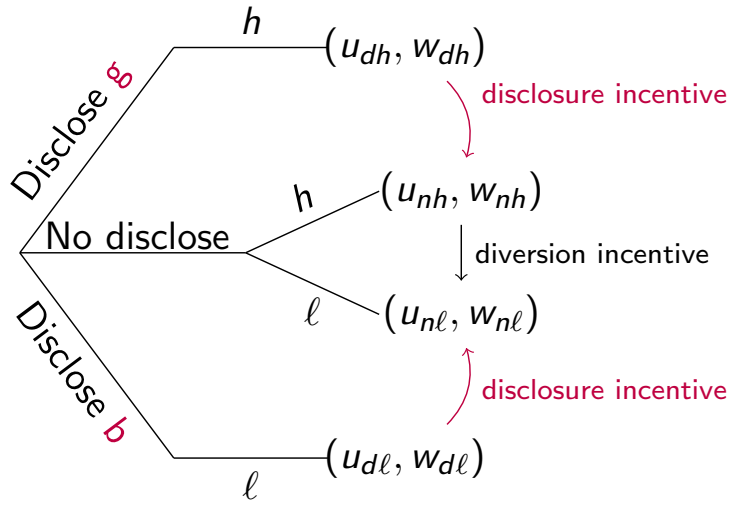
Contracting and timing

- The timing of events at date t is:



- Given observed history, investors choose:
  - to liquidate the firm with probability $\theta_t \in [0, 1]$.
  - to pay the manager a cash amount $u_t \geq 0$.
- Upon liquidation, investors and the manager both get *zero*.

Incentives



- To provide disclosure incentives:

$$u_{dj} + \frac{w_{dj}}{1+r} \geq u_{nj} + \frac{w_{nj}}{1+r} \qquad j \in \{h, \ell\} \qquad (IC_d)$$

- To prevent cash diversion:

$$u_{nh} + \frac{w_{nh}}{1+r} \geq \delta + u_{n\ell} + \frac{w_{n\ell}}{1+r} \qquad (IC_n)$$

- Contract satisfies promise keeping:

$$v = (1-\theta)\mathbb{E}_i\left(u_i + \frac{w_i}{1+r}\right), \quad i \in \{dh, d\ell, nh, n\ell\} \qquad (PK)$$

Firm's problem

- Maximize firm value $s(v)$ by choosing a policy that solves:

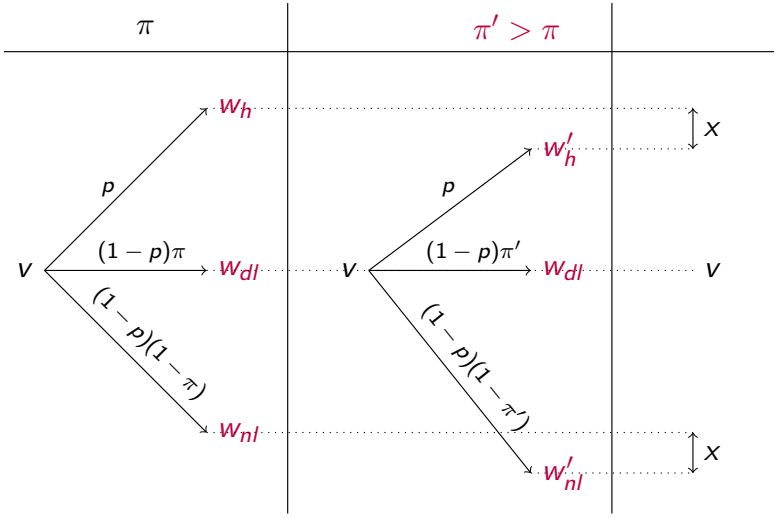
$$s(v) = \max_{\theta, u_i, w_i} (1-\theta)\left\{\mu + \frac{1}{1+r}\left[\pi \underbrace{\mathbb{E}(s'|d)}_{\text{disclosure}} + (1-\pi) \underbrace{\mathbb{E}(s'|n)}_{\text{no disclosure}}\right]\right\}$$

$$\text{s.t.} \quad (IC_d), (IC_n), (PK), u_i \geq 0$$

- There is no cash pay if and only if $v \leq \bar{v}$, which is the same boundary for every π.
- There is stochastic liquidation ($\theta > 0$) if and only if $v \leq v^1(\pi)$, which stricly increases in π.

Impact of disclosure on firm policy

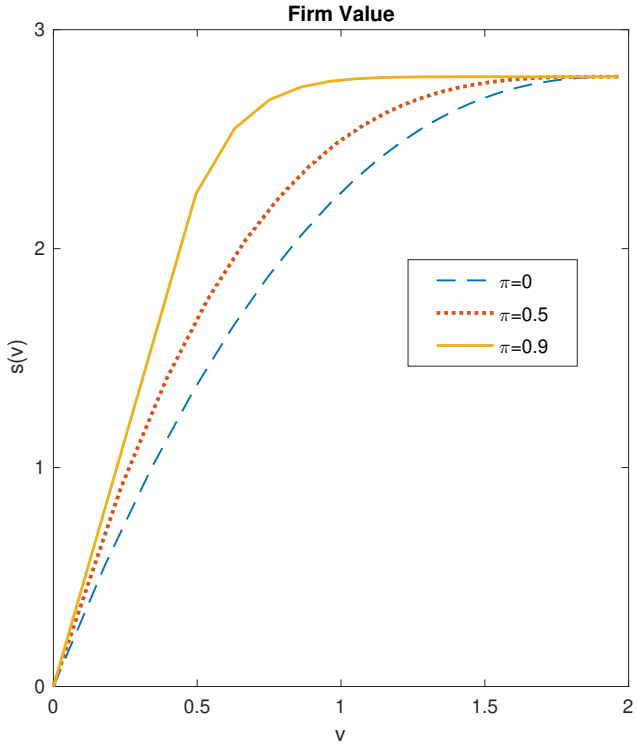
- Good-news disclosure constraint binds for all π: $w_{dh} = w_{nh} = w_h$
- Bad-news disclosure is rewarded: $w_{dl} \geq v > w_{nl}$
  - The firm is more likely to reach a low-default-state as $\pi \uparrow$.
- No-disclosure is punished: $w_{nl}, w_h \downarrow \pi$
  - Upon no-disclosure, the firm is more likely to default as $\pi \uparrow$.

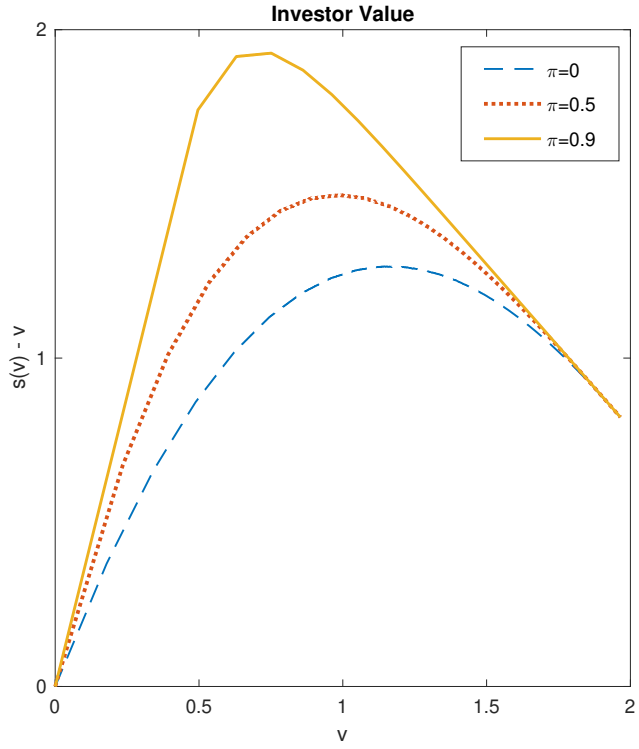


Capital structure implementation

- Equity: the manger holds a fraction λ of shares.
- Long-term debt: perpetuity with coupon ℓ.
- Short-term debt: credit line with limit $\frac{\bar{v}}{\lambda}$, and interest rate of
  - 0, if bad news disclosed.
  - $\frac{r}{1-(1-p)\pi} > r$, otherwise.
- The firm can borrow $\frac{v}{\lambda}$ short term.
  - The firm defaults if it exhausts the funding liquidity.
  - The firm pays dividends only when its credit is paid off.
- Alternative: interest r on short-term debt, but the firm holds one-period forwards that transfers from other states to the state with bad-news disclosure.

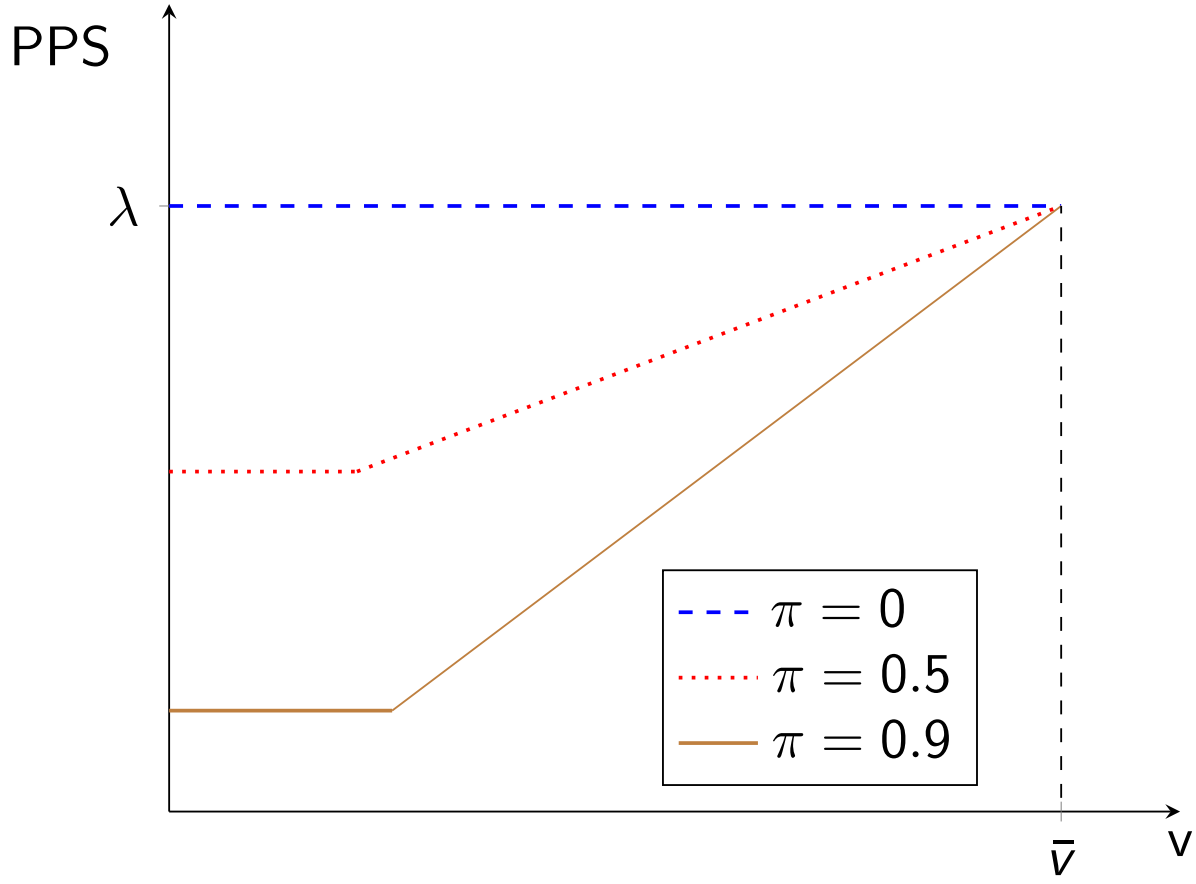
Impact of disclosure on firm & investor value





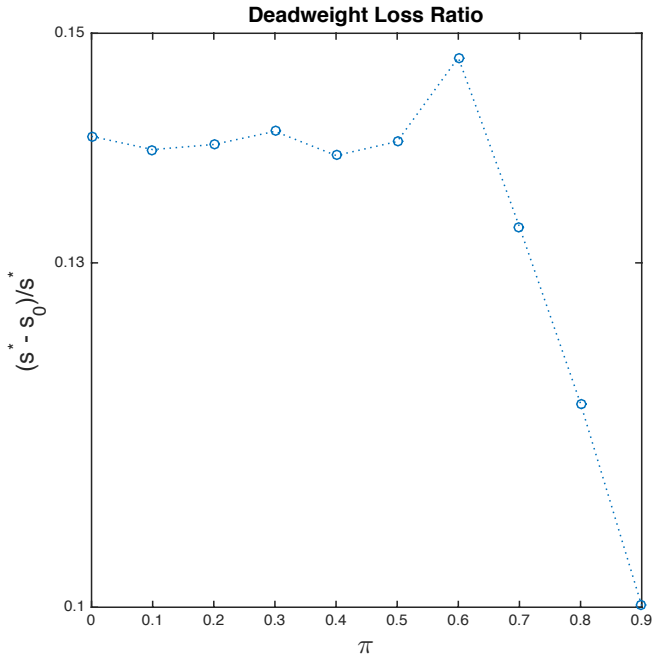
Impact of disclosure on pay-performance sensitivity

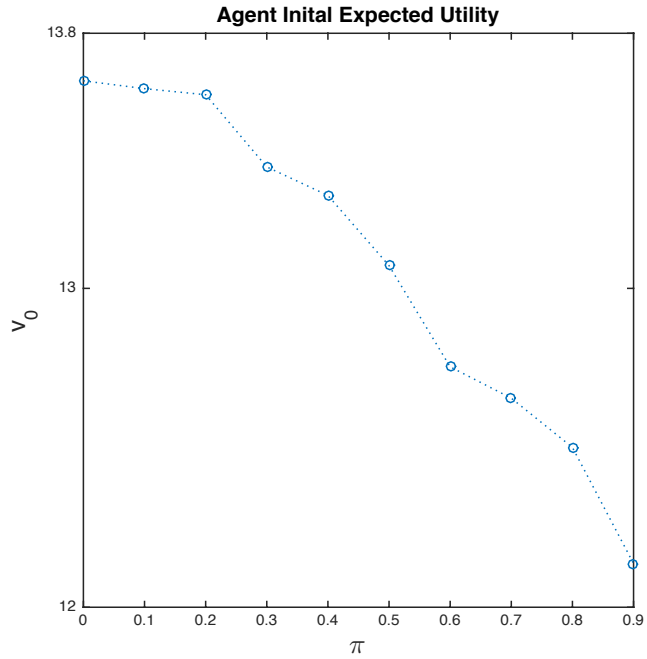
- PPS is defined as: $\frac{\mathbb{E}(w|h) - \mathbb{E}(w|\ell)}{h - \ell}$



Joint design of information and capital structure (time zero)

- The optimal capital structure is: $v_0 \equiv \arg\max_v \; s(v) - v$
  - Where v_0 proxies a firm's initial optimal leverage
- Credit spread $=$ (1 - $\underbrace{\text{Recovery Rate}}_{\text{normalized to 0}}$) $\times$ Pr.[defaul] $= \frac{s^* - s(v_0)}{s^*}$
  - Where s^* is the first best surplus (i.e., Pr[default]=0)





Conclusion

- We show that the empirical evidence about earnings guidance is consistent with the prediction of a dynamic agency model:
  - Loss firms that preemptively disclose outperform, as they get access to cheaper short-term financing to survive the shock.
- Disclosure alleviates the financing friction, but may lead to high leverage and more inefficient default.
- Our mechanism and predictions are different from monitoring, where the evidence is observed by investors instead of the manager.

Costly disclosure and its adoption