Signaling Through Dividends

Dividend Policy can Serve as a Signal of Cash Flow (Bhattacharya 1979)

- Consider a firm run by a risk neutral manager who owns an equity stake $\alpha > 0$ in the firm.
- The firm generates cash flows in periods t=1 and t=2.
- The cash flows in each period are iid. and can take either a value of 0 or 1.
- The variable γ_i $(i = G, B)$ denotes the probability that the realized cash flow at any period is equal to 1.
- At date 0, the manager learns the true value of γ, but other shareholders remain uninformed

$$\Pr(\gamma = \gamma_G) = \beta$$

Uncertain Liquidity Preferences

- The manager does not know in advance when she will need to consume (as in Diamond and Dybvig (1983).
- The manager's state contingent utility is

$$u(c_1, c_2) = \left\{ \begin{array}{ll} c_1 & \text{with probability } p \\ c_2 & \text{with probability } 1-p \end{array} \right\}$$

- At date 0, the manager does not yet when she wants to consume. She learns it in the begining of period 1. If it turns out that she wants to consume in date 1, he needs to sell her stake in the firm. Thus at date 0, the manager cares both about the final value of her stake at date 2 and market value of her stake at date 1.

Sequence of Events

Timing in Date 1

- At date 1, the firm's cash flow is realized and observed by all
- The firm borrows what ever is needed to meet its divident payment
- The manager learns its consumption preferences
- The manager decised whether or not to liquidate her stake in the firm.

Dividend as a Signal

Consider a manager who learns that its type is γ_G

- In a world of symmetric information, the value of the firm at date 0 would be $2\gamma_G$ (assuming zero discounting).
- In the absence of any information identifying the type of the firm, the market would value this firm at

$$2[\beta\gamma_G + (1-\beta)\beta\gamma_B]$$

Dividend as a Signal

- We shall now show that the manager can raise the market value of the firm bu announcing a dividend payout d such that $1 \geq d > 0$ at date t=1.
- The promised d works out a signal only if it is too costly for a firm with a low cash flow γ_B to commit to this dividend.
- The cost from committing to a dividend payout d arise here from the cost of borrowing that must be incurred when realized cash flow in period 1 falls short of the promised dividend payment.
- Let $\delta > 0$ denote the unit deadweight cost of borrowing which is essential for the argument (you need an imperfection in the capital market due to debt collection or monitoring costs).

Dividend as a Signal

Market's Posterior conditional on Dividend

- Suppose the market has the following posterior beliefs

$$\beta(\hat{d}) = \Pr(\gamma = \gamma_G \mid \hat{d}) = \left\{ \begin{array}{l} 1 \text{ for } d \geq \hat{d} \\ 0 \text{ for } d < \hat{d} \end{array} \right\}$$

Dividend as a Signal

Conditions for Separation of Types

- Given the posterior beliefs specified by $\beta(\hat{d})$, it is too costly for a manager of a low cash flow firm to commit to a dividend payout d if and only if

$$\alpha 2\gamma_B \geq \alpha(2\gamma_G - d(1-\gamma_B)\delta)$$

LHS is manager's payoff if she commits to no dividend. RHS indicates that market is fooled to value the firm at $2\gamma_G$, but there is a probability that deadweight cost of borrowing δ is incurred on the funds borrowed to pay the dividend.

Dividend as a Signal

Conditions for Separation of Types

- It is worth committing to a dividend of d for a high cash flow firm's manager if and only if

$$\alpha(2\gamma_G - d(1-\gamma_G)\delta) \geq \alpha[p2\gamma_B + (1-p)2\gamma_G]$$

RHS indicates that with probability 1-p the manager does not need to sell her stake at date 1, hence can hold onto it and consume $\alpha 2\gamma_G$ at date 2.

Conditions for Separation of Types

- Rearranging these two inequalities, we obtain

$$\frac{2(\gamma_G - \gamma_B)}{(1-\gamma_B)\,\delta} \leq d \leq \frac{2p(\gamma_G - \gamma_B)}{(1-\gamma_G)\,\delta}$$

- Therefore, as long as δ is large enough (so that $d \leq 1$) and

$$p \geq \frac{(1-\gamma_G)}{(1-\gamma_B)}$$

  then it is possible to find a separating equilibrium.
- The signaling theory outlined here assumes that the firm can commit to a dividend policy.