



Andreas Krause

Signalling through raising debt

Informed companies

- ▶ Companies are generally better informed about their investments than outside investors
- ▶ Communicating their information reliably is not easily possible
- ▶ Companies can use debt to signal their assessment of the investment

Uncertain investment outcomes

- ▶ We have two types of companies, one who generates a high asset value from investments and the other a low value: $V_H > V_L$
- ▶ The company knows in advance the outcome of their investments, but investors do not have this information
- ▶ After the investment has been completed, the results are publicly revealed
- ▶ In order to finance the investment, the company can use debt or equity
- ▶ If the company takes on debt that is higher than the outcome of their investment, it will fail

Manager remuneration

- ▶ Managers receive salaries that are dependent on the value of the company as perceived by the market
- ▶ They receive a fraction of the asset value the market infers in time period 1 and then gain a fraction of the value revealed after the investment has been completed
- ▶ $\Pi_M^i = \gamma \hat{V} + \gamma V_i$
- ▶ If the company defaults when having taken a loan exceeding the value after completing the investment, they will receive no compensation for that time period
- ▶ $\Pi_M^i = \gamma \hat{V}$

Debt threshold

- ▶ We define a threshold debt level such that is between the asset values for the two types of companies: $V_H > D^* > V_L$
- ▶ Suppose now that if a company takes on debt above the threshold, $D > D^*$, then outside investors assess it as having high value
- ▶ If a company takes on debt below the threshold, $D \leq D^*$, then outside investors assess it as having low value

Manager remuneration and debt levels

- ▶ Managers of high-value companies obtain the high remuneration in time period 1 if they take on high debt and low remuneration if they take on low debt
- ▶ In time period 2 the type is revealed and they receive the high remuneration
- ▶ $\Pi_M^H = \begin{cases} \gamma V_H + \gamma V_H & \text{if } V_H > D^* \\ \gamma V_L + \gamma V_H & \text{if } V_H \leq D^* \end{cases}$
- ▶ Managers of low-value companies obtain the high remuneration in time period 1 if they take on high debt and low remuneration if they take on low debt
- ▶ In time period 2 the type is revealed and they receive the low remuneration if they had low debt
- ▶ If the low-value company had taken on high debt, it would fail to repay its debt and the manager receives no remuneration
- ▶ $\Pi_M^H = \begin{cases} \gamma V_H + 0 & \text{if } V_H > D^* \\ \gamma V_L + \gamma V_L & \text{if } V_H \leq D^* \end{cases}$

Manager choice of debt level

- ▶ A manager of the high-value company would choose a high debt level if
$$\gamma V_H + \gamma V_H \geq \gamma V_L + \gamma V_H$$
- ⇒ $V_H \geq V_L$
- ⇒ A manager of high-value companies would take high debt levels
- ▶ A manager of the low-value company would choose a low debt level if
$$\gamma V_H \leq \gamma V_L + \gamma V_L$$
- ⇒ $V_H \leq 2V_L$
- ⇒ A manager of low-value companies would take low debt levels if the differences between company types is not too big

Separation of company types

- ▶ The managers' choices are consistent with the way the market interprets their choices
- ▶ High-value companies take on high levels of debt
- ▶ Low-value companies take on low levels of debt
- ▶ By investigating the debt level, company types can be distinguished



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Andreas Krause
Department of Economics
University of Bath
Claverton Down
Bath BA2 7AY
United Kingdom

E-mail: mnsak@bath.ac.uk