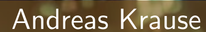

Adverse selection and financing choices

Information asymmetry

- Companies often have better information about their value than outside investors
- The value of equity as assessed by these outside investors will then not accurately reflect its value
- If the true value of the equity is high, the equity will be undervalued
- If the true value of the equity is low, the equity will be overvalued
- Financing decisions can reveal the true type of company

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Company types

- A company may be of high or low value: $V_H > V_L$
- The company knows its value, but investors do not have this information
- It has an investment opportunity that will generate a known outcome
- To finance this investment, the company needs to raise funds

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Investors providing equity

- The company can raise outside equity if investors make profits
- Investing in equity, investors will obtain their fraction of the value generated by the existing company and the new investment
- Investors do not know the value of the company but form expectations: $V = pV_H + (1-p)V_L$
- $E \leq \lambda\left(V + \hat{V}\right)$

$\Rightarrow$ $\lambda \geq \frac{E}{V+\hat{V}}$

- If investors are competitive they will only obtain the minimum fraction of the company

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Companies raising equity funds

- Existing company owners retain their fraction of the company, whose value they know, in addition to the value generated by the new investment
- $\hat{\Pi}_C^i = (1-\lambda)\left(V_i + \hat{V}\right)$
  $= \frac{V+\hat{V}-E}{V+\hat{V}}\left(V_i + \hat{V}\right)$
- If not making the investment, the existing owners obtain $\Pi_C^i = V_i$
- They make the investment by raising equity if $\hat{\Pi}_C^i \geq \Pi_C^i$

$\Rightarrow$ $p \geq p_i^* = \frac{V_i E - \left(V_L + \hat{V} - E\right)\hat{V}}{\hat{V}(V_H - V_L)}$

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Comparing company decisions

- If the company with high value would raise equity for investment, the company with low value would raise equity too

$\Rightarrow$ No information is revealed by a company raising equity

- If one company does not raise equity while another does, the two company types can be distinguished
- The company raising equity will be of low value, while the company raising no equity will be of high value

$\Rightarrow$ Not raising equity is (potentially) positive information

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Company obtaining a loan

- Companies can raise the same funds through a loan
- In this case the existing owner would retain the company and repay the loan
- $\hat{\hat{\Pi}}_C^i = V_i + \hat{V} - (1 + r_L)\, E$
- Debt finance is preferred to equity finance if $\hat{\hat{\Pi}}_C^i \geq \hat{\Pi}_C^i$

$\Rightarrow$ $p \leq p_i^{**} = \frac{V_i - r_L \hat{V} - (1+r_L) V_L}{(1+r_L)(V_H - V_L)}$

- If companies of low value prefer a loan, companies with high value would choose a loan

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Distinguishing company types

- If adverse selection is high, $p \leq p_L^{**}$, all companies will choose loans
- If adverse selection is low, $p \geq p_H^{*}$, all companies will raise equity
- If adverse selection is medium, $p_L^{**} > p > p_H^{*}$, high-value companies will choose loans and low-value companies will choose equity
- For medium adverse selection, the choice of debt or equity (capital structure), reveals information about the type of company
- This information would then be reflected in the value of the equity as seen by outside investors

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