Fall 2008
International Corporate Finance I

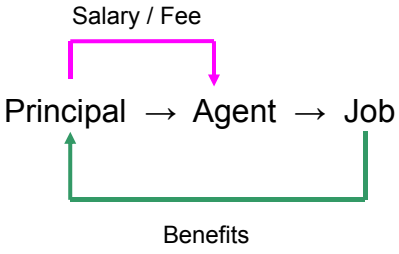
LECTURE 7 and 8

Agency Problem and Capital Structure

Tokuo Iwaisako
HITOTSUBASHI UNIVERSITY

Agency problem in general

- Principal-agent problem
  - Sports player and his/her agent
  - Ex. David Beckham's transfer from Real Madrid to LA Galaxy



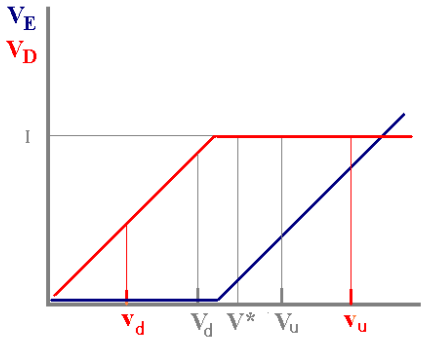
Does the agent have incentives to work for the principal?

- Why ask agent?
  - Do not have time.
  - Expertise.
- Investors and the management of the firm
- Variations
  - "Stock holder = management" and debt holder
  - Stock holder and management

Agency problem of debts (1)

- Jensen and Meckling (1976)
  - Stiglitz and Weiss (1980)
- Assume: "Stock holder = management"
- Debt holder
- Risky and safe projects (same mean).
- Because debt exists, the management choose risky project.

Payoffs of stock-holders and debt-holders



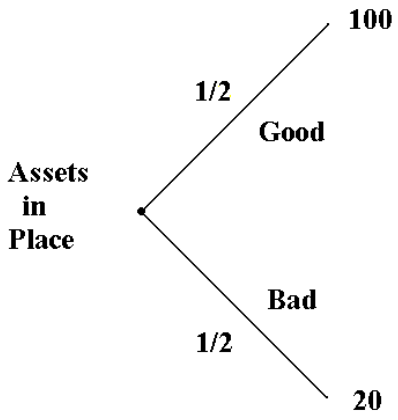
$v_d < V_d < V_u < v_u$

- Management(=stockholder) prefers risky project
  - Safe Project: (0+Vu)/2 = Vu/2
  - Risky Project: $v_u/2$
- Debt holder prefers Safe project
  - Safe Project: $(v_d+I)/2$
  - Risky Project: $(v_d+I)/2$

Agency problem of debts (2)

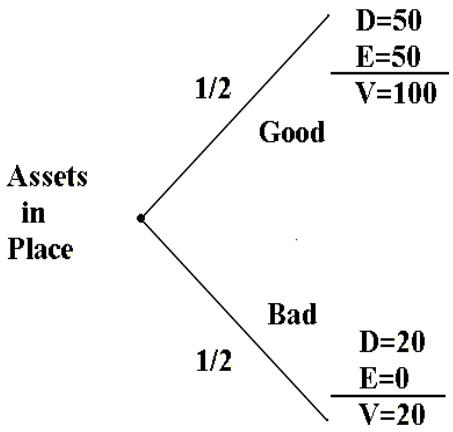
- Hypothetical firm
  - Myers (1977) “Determinants of Corporate Borrowing”
  - Existing risky business
  - Investing to new project
  - Interest rate is zero.
  - Both equity-holders and debt-holders are risk neutral

Existing business



Suppose the firm is borrowing 50

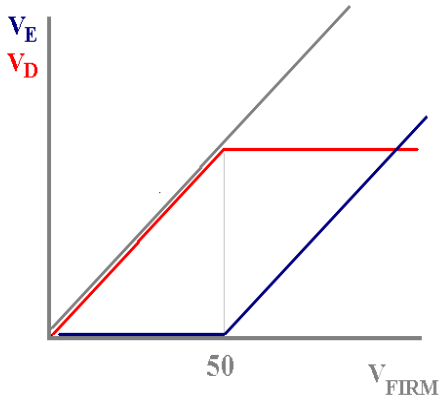
Payoffs of equity-holders (E) and debt-holders (D)



Expected payoffs

- Equity: $V_E = 25$
- Debt: $V_D = 35$
- The firm's total value: $V_{FIRM} = 60$

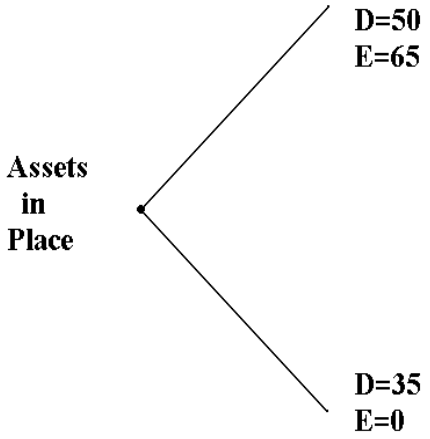
Payoffs of debt-holders and equity-holders



New business opportunity

- Initial investment ＝ 10
- Safe Cash flow ＝ 15
- NPV ＝ 5
- Can this firm raise funds for this project?

Payoffs
existing business + new project



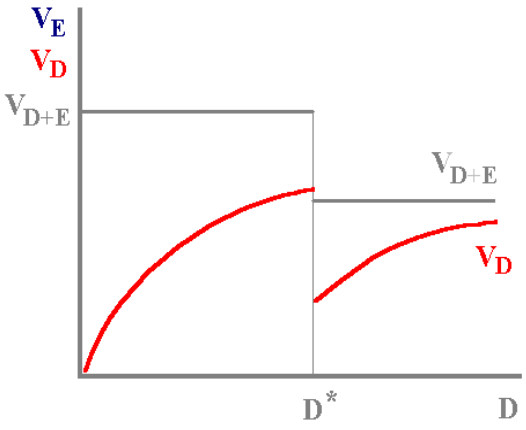
Expected payoffs when the firm invested to new project

- Equity: V_E = 32 1/2 (7 1/2 increase)
- Debt: V_D = 42 1/2 (7 1/2 increase)
- The firm's total value : V_{FIRM} = 75 (15 increase)
- If initial investment of the new project (=10) was financed by all equity, payoffs to equity holders should increase at least 10.

Debt overhang

- If the new investment project was financed by stocks, there is no incentive for equity-holders to invest to new project.
- Basic Insight： New investment → Transfer from equity-holders to debt-holders.
- Such a situation is called **Debt Overhang**.
  - Cf. Non-performing loan problem in Japan, Debt problem in developing countries.

Relationship between amount of debts and the firm's value



Implications from the model

- If the existing business is under the management's discretion, the firm should not increase debts too much.
- If the amount of the debts are large, even a positive NPV project might not be invested.
- "Project finance" makes a sense.

How can we remove such inefficiency?

- Renegotiate existing debt-holders.
  - When the firm is in "debt overhang", debt-holders' payoffs might increase by giving up the part of their claims.
- Issue senior debts, "subordinate debt."
- Issue short-term debt.

Firms issuing corporate bonds

- Difference in the riskiness of firms to investors
  - Likelihood of bankruptcy
- Bond rating by rating agency
  - AAA, BB, B+, C and so on.
  - Higher the rating, lower the interest rate (= the size of risk premium)

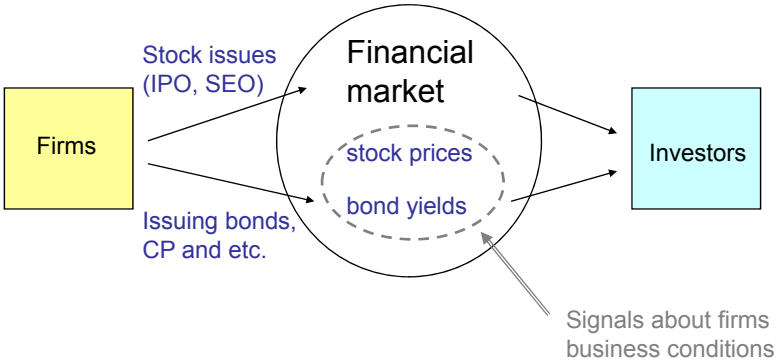
Firm's "reputation"determines bond yield

- Firm's "reputation" is the most important determinant for the firm's cost of capital and cost of market financing.
  - Commercial paper
  - Junk bonds

Rating agency

- E.g. Moodys, Standard and Poor's
- Rating agency provides “information” to the market
  - Analyze firms’ business conditions and prospects.
  - Examine balance sheet information and other materials to determine the “rating” of a particular firm.
- Getting profits from institutional investors or from the firms rated by rating agency.

Informational role of asset prices



To raise funds in market, your reputation is necessary

- David Bowie:
  "Bowie bond"
  - Issued in 1997
  - Raised US$ 55 million
  - Recently downgraded by Moody's to Baa3 due to bad business condition in music industry

There can be "Madonna bond" or "Tiger Woods bond". But, can you issue bond in market?

Public (market) debt vs private debt

- It is very likely that you cannot issue bonds to finance your tuitions.
- But, you can borrow from banks

- Same things for firms: When the firm's reputation is not high enough, they can't issue bonds. But, they can borrow from banks.
  - Reputation does not have to be very low. Just the firm is unknown.

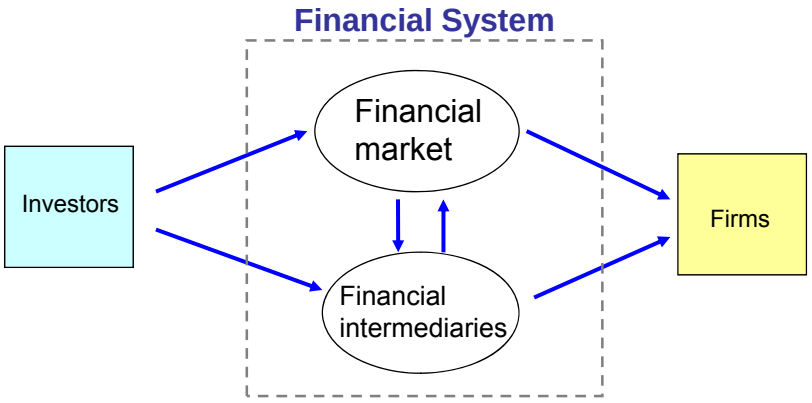
Bank lending and other "indirect" finance

- When market financing is too costly for the firm, the firm will go to:
  - Banks
  - Venture capital
  - Private equity
- Financial intermediaries

The role of financial intermediaries

- **Produce information** about the firm for investors and borrowers
- Solve the agency problem between them
- These are the information that cannot be transmitted or assessed by the pure market system
- Requires some expertise
  - entrepreneurial finance
  - mortgage

Flows of funds in the financial system



Different concepts in information asymmetry (1)

- Judging borrower firm's quality before making loans
- Adverse selection, signaling
- "Hidden information"
- Action: Screening
  - Deciding provide loans or not, Underwriting bond issues

Different concepts in information asymmetry (2)

- Monitoring borrower firm's behavior after loan has been made.
- Moral hazard
- "hidden action"
- Action: Monitoring

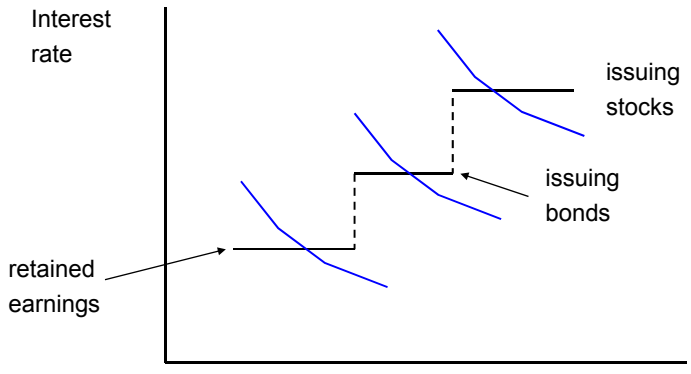
Banks as delegated Monitors

- Ex post monitoring of borrowers behaviors
  - Monitoring cost: c
  - No.of investors: n
- Monitoring by each investor: nc
  - Free-rider problem
- Monitoring by the bank: $(c+\pi)/n$
  - π: Bank's profit
  - Yield spreads between deposits and lending

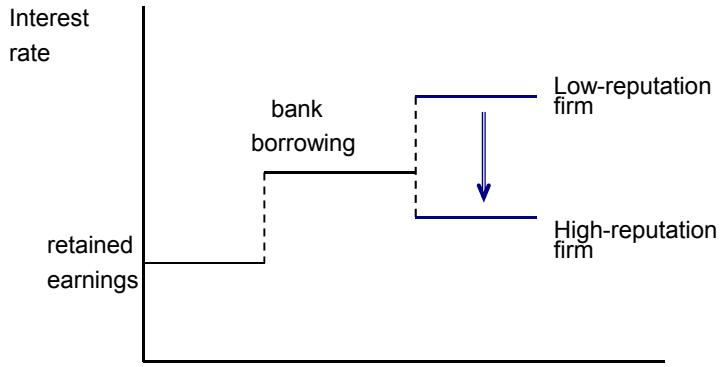
Implications of the model

- Monitoring cost depends on the firm's reputation.
- In the industry that judging firm's quality is not difficult, the dependence to bank financing will be low.
  - Bio tech vs retail industry
- In the country in which economic institutions are established, the dependence to bank financing will be low.
  - Accounting standard and business media

Pecking order for the firm



Choice between bond issue or bank borrowing



Dynamics of the firm's financing decision

- A firm will go to market when its reputation is established
- Entrepreneurial firm starts with
  - own money
  - bank borrowing; venture capital
  - IPO: becomes a public firm
  - Issue corporate bonds: this is already very large firm

Empirical evidence:
Hoshi-Kashyap-Scharfsetin

- Japanese “firm groups” (Keiretsu)
- Very strong long-term relationship with groups’ main banks
- Analyzing investment behaviors of group firms and non-group firms
- Non-group firms investments are more sensitive to current cash flows.