# RIETI-CARF Conference

What Financing Mechanisms and Organizations of Business Entities Best Facilitate Innovation?

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## Summary of Session 1

# Finance and Investment – a Theoretical Framework

Takao Kobayashi (University of Tokyo)

# 1. ¨Macro-finance¨ Perspectives

# Financial System and Economic Growth

- **Two opposing views**
  - **Joseph Schumpeter (1911)**
    - Development of a country‘s financial sector plays a vital role in economic growth.
  - **Joan Robinson（1952)**
    - Where enterprise leads，finance follows.
    - Financial development is anything but a sideshow to economic development.

# External Financing and Investment

| Sample Industrial sectors | All Companies External dependence | All Companies Capital expenditures | Mature companies External dependence | Mature companies Capital expenditures | Young companies External dependence | Young companies Capital expenditures |
|---|---|---|---|---|---|---|
| Tobacco | -0.45 | 0.23 | -0.38 | 0.24 | - | - |
| Footwear | -0.08 | 0.25 | -0.57 | 0.23 | 0.65 | 0.26 |
| Apparel | 0.03 | 0.31 | -0.02 | 0.27 | 0.27 | 0.37 |
| Iron and Steel | 0.09 | 0.18 | 0.09 | 0.16 | 0.26 | 0.19 |
| Motor Vehicle | 0.39 | 0.32 | 0.11 | 0.33 | 0.76 | 0.32 |
| Textile | 0.40 | 0.25 | 0.14 | 0.24 | 0.66 | 0.26 |
| Electric Machinery | 0.77 | 0.38 | 0.23 | 0.29 | 1.22 | 0.46 |
| Office and Computing | 1.06 | 0.60 | 0.26 | 0.38 | 1.16 | 0.64 |
| Drugs | 1.49 | 0.44 | 0.03 | 0.32 | 2.06 | 0.47 |

(R. Rajan and L. Zingales (1998))

- External dependence = the fraction of capital expenditures not financed with cash flow from operations
- Cash flow from operations = funds from operations + decreases in inventories
  + decreases in receivables + and increases in payables※
- Capital expenditures = the ratio of capital expenditures to net property plant and equipment

※ This definition includes changes in the nonfinancial components of net working capital as part of funds from operations.

# Comparison of Sources of External Financing

| Country | External Financing as a Fraction of Total Financing: Global Vantage | External Financing as a Fraction of Total Financing: OECD[a] Data |
|---|---|---|
| United States | 0.20 | 0.23 |
| Japan | 0.50 | 0.56 |
| Germany | | 0.33 |
| France | | 0.35 |
| Italy | | 0.33 |
| United Kingdom | 0.36 | 0.49 |
| Canada | 0.30 | 0.42 |

- The ratio of net external financing to the sum of cashflow from operations and net external financing.
- Excludes financial companies.
- Global Vantage database includes information only for publicly traded companies while OECD data is for all corporations.

(R. Rajan and L. Zingales (1995))

- **For the United States, United Kingdom, and Canada, external financing is smaller than internal financing, with firms in the United States raising the least from external sources.**
- **Firms in Japan consistently raise more money externally than internally. This evidence is supported by data going back to 1972.**
- **Firms in Germany, France, and Italy raise substantially less from external sources than either firms in the United Kingdom or Canada.**

# External Financing by Debt vs Equity

| | Composition of External Financing | | | |
|---|---|---|---|---|
| | Net Debt Issuance | | Net Equity Issuance | |
| Country | Global Vantage | OECD Data | Global Vantage | OECD Data |
| United States | 1.02 | 1.34 | −0.02 | −0.34 |
| Japan | 0.80 | 0.85 | 0.20 | 0.15 |
| Germany | | 0.87 | | 0.13 |
| France | | 0.39 | | 0.61 |
| Italy | | 0.65 | | 0.35 |
| United Kingdom | 0.55 | 0.72 | 0.45 | 0.28 |
| Canada | 0.62 | 0.72 | 0.38 | 0.28 |

(R. Rajan and L. Zingales (1995))

- Net debt financing is the sum of net short term debt issuances and long term debt issuances less long term debt reduction.
- Equity issuance includes the issue of both common and preferred stock and conversions of debt to equity. Net equity financing is the sum of equity issuance less equity reduction

- **For U.S. firms external finance has consisted entirely of debt. It exceeds 100%, because of the intense activity in the market for corporate control (leveraged buyouts) over this period.**
- **Japan and Germany are the second in using debt issuance rather than equity issuance, with roughly 85% debt and 15% equity.**

# 2. Micro-finance Perspectives

# Framework of Traditional Corporate Finance

# Asset Intensive Firm

- **economies of scale and economies of scope**
  - The first entrant in each industry can exploit the economies of scale and scope and gain a formidable advantage visà-vis new entrants.
- **highly vertically integrated**
  - The realm of transactions governed by power (authority) rather than by prices (market *versus* organization, Coase (1937)) tend to force companies to take direct control of their suppliers and distribution systems.
- **tight control over its employees**
  - Importance of capital as well as vertical integration (scarcity of market opportunities for skilled workers) tend to reduce the bargaining power of employees as a stakeholder of a firm.
- **owned by dispersed public investors**
  - The size and the asset intensity require more investment and more risk taking than are within the capacity of the management.
  - The control conferred by the ownership of crucial assets make ownership from outside feasible.

# Firm as a nexus of explicit contracts

- **All these factors (stemming from asset-intensive firms) led the "nexus of contract" view of a firm to drive the highly elaborate refinements of the main-stream corporate finance.**

- **Implications for capital structure (issues related to financing choices)**
  - **additivity of financial claims**
    - The value of the firm is the sum of the value of all financial claims outstanding.
  - **irrelevance of financing choices (Modigliani and Miller (1958))**
    - The total payoff of the firm is well defined (thanks to the clear-cut boundary of a firm) and not affected by financing choices, and given the total payoff the total value of the firm is determined independent of capital structure.

# Implications for Corporate Governance

- **Corporate Governance**
  - 'the ways in which suppliers of finance to corporation assures themselves of getting a return on their investment' (Shleifer and Vishney (1997))
  - Corporate governance is the study of how authority is allocated and exercised.

- **Shareholders supremacy**
  - In the simple nexus of contract world, all members of the nexus, except the shareholders (i.e., residual claim = equity), would be indifferent to the choice made by the firm because they are contractually protected against any negative consequence.
  - Hence, the maximization of a firm's value corresponded to the maximization of shareholders' value. Consequently, the traditional precepts of corporate governance were all aimed at empowering shareholders by reducing the cost of collective action.

# The Agency Problem

- **Although de jure equity is the only residual contract, de facto a firm's decisions influence the payoff of many other members of the nexus, sometimes even to a greater extent than that of equity holders.**

- **Agency costs is the costs due to conflicts of interests among stakeholders. The simple nexus of contract view makes agency problem between top managers and shareholders the problem.**

- **Both capital structure and corporate governance became singly focused on this dimension. The objective became to maximize the protection of outside investors, and the means was by reducing or removing all the obstacles to shareholders' control.**
  - Transparency
  - accountability of directors
  - contestability of corporate control
  - managerial compensation aligned with shareholder wealth maximization

# Moral hazard and Adverse Selection

- **Agency cost of debt**
  - **Asset substitution** **(Jensen and Meckling (1976))**
    - **Limited liability** ➔ Equity is a call option on the firm
    - As a result, equityholders benefit from "going for broke," i.e., investing in very risky projects, even if they are value-decreasing.
      - excessive risk taking (risk shifting), bad investments
  - **Underinvestment due to Debt overhang** **(Myers (1977))**
    - When firms are likely to go bankrupt in the near future, equityholders bear the entire cost of the investment, but the returns from the investment may be captured mainly by the debtholders.
    - As a result, a firm that issues risky debt to outsiders has an incentive to underinvest in projects and will sometime forgo positive NPV projects.
- **Cost of equity issue** **(Myers and Majluf (1984))**
  - **Underinvestment due to Asymmetric information**
    - If market is underpricing the assets in place (relative to the true information that the manager has), new investors capture more than the NPV of the new project, resulting in a net loss to existing shareholders.
    - As a result, old shareholders will prefer passing up the positive NPV project rather than **diluting equity value that accrues to them**.

# Focus of this Conference

# The New Firm Paradigm

- **New firms are (Zingales (2000))**
  - **Human-knowledge-intensive, Human-capital-intensive**
  - **Less organizational pyramid**
    - The exercise of authority by the headquarters is severely limited by the ability of employees to quit, taking with them their human capital or part of the firm.

# Incomplete Contracts and Property Rights

- **Verifiability and Incomplete Contracts**

  **(Grossman and Hart (1986), Hart and Moore (1990))**

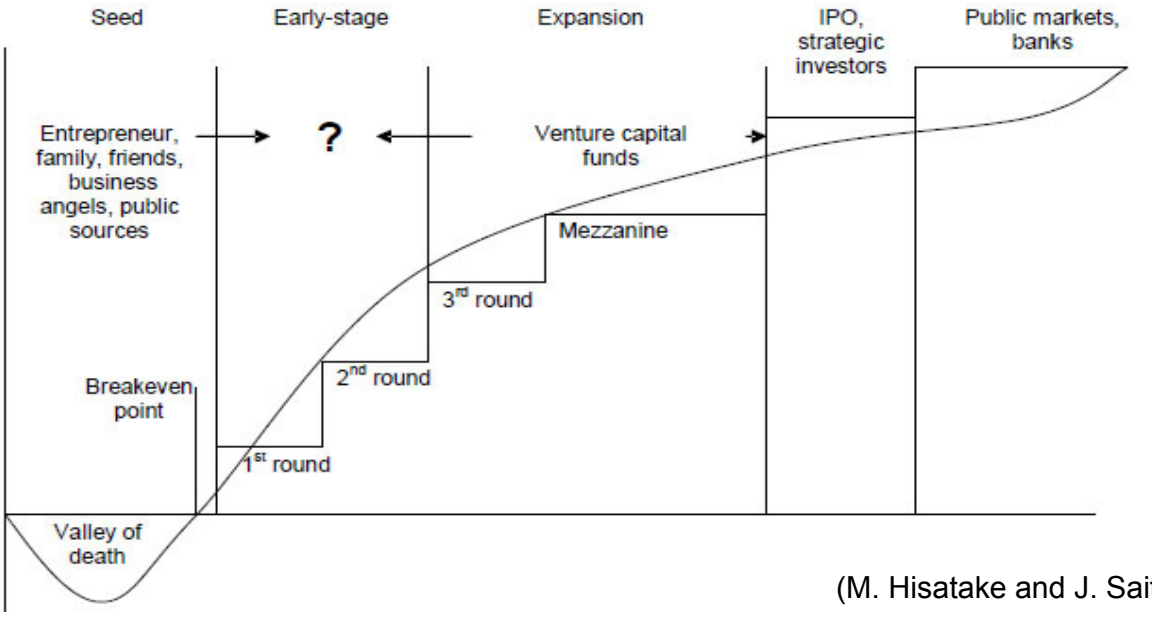
- **Property Rights**
  - If contracts are incomplete, there arises a need to allocate the right to decide in the events not specified by the initial contract.
  - It affects the distribution of the ex post surplus created by an enterprise and, thus, the incentives to generate this surplus.

- **Can beautifully rationalize contingent control allocation**

  **(Aghion and Bolton (1992), Bolton and Scharfstein (1990), Hart and Moore (1994))**
  - When the initial contract cannot achieve coincidence of objectives between the entrepreneur and the agent, the contingent control allocation induced by standard debt financing achieves efficiency.

# Stage of equity financing

Figure 1. Stages of equity financing




(M. Hisatake and J. Saito)

- **Growth stage of the firm affects the appropriate mode of finance.**
- **It is true innovative entities seek IPO or being acquired by large companies.**
- **But, the most important innovation are usually made before IPO.**

# Emphasis on allocation of property rights

- **In the complete contract world, enforceability or effectiveness is assured by the legal system.**
- **But, in the incomplete contract world, contract, organization, law, and institutions, are affecting each other, usually complementarily.**
- **Human-knowledge intensive firms involve multiple stakeholders.**
- **Property rights should be broken down into separate pieces.**
  - **Control rights, Income rights, Alienation rights (the right to sell)**
- **Should answer questions such as:**
  - The power of a shareholder and their role in human capital-intensive firms
  - The effects of mergers and spin-offs
  - Costs and benefits of corporate diversification
  - Corporate governance system that best protect the integrity of the firm
  - The way to allocate property rights among different stakeholders, be they financial claimholders (equityholders and debtholders) or nonfinancial ones, such as employees, key customers, and suppliers.
  - Whether new growth opportunities should be exploited by new firms or by existing firms who generally have access to a much better pool of resources

# 3. Findings of US and Japanese Venture Capital

# Venture Capitalists in US

- Financial intermediaries that raise funds by forming limited partnerships (10-12 years).
- Investing in young firms' private equity.
- Often former entrepreneurs and top school MBAs (Harvard).
- Often actively involved in the management of portfolio firms.
- Harvest investment returns by trade sales and IPOs.

# VC-funded Firms Grow Fast

- Examples of VC funded companies are Amazon.com, e-bay, Fedex, Microsoft,…
- IPO companies have frequently financed through VCs.
- VC funded companies employ more than 10 million jobs (9.4%) and $1.8 trillion in sales (9.6%) in 2003. -- Global Insight, 2005

# VC-backed IPOs

| | # of IPOs | % VC-backed | # of Tech IPOs | % VC-backed |
|---|---|---|---|---|
| **1980-89** | **1,982** | **27%** | **521** | **47%** |
| **1990-94** | **1,632** | **44%** | **380** | **71%** |
| **1995-98** | **1,752** | **36%** | **651** | **53%** |
| **1999-00** | **845** | **59%** | **576** | **66%** |
| **2001-05** | **538** | **40%** | **163** | **62%** |
| 1980-2005 | 6,749 | 39% | 2,291 | 61% |

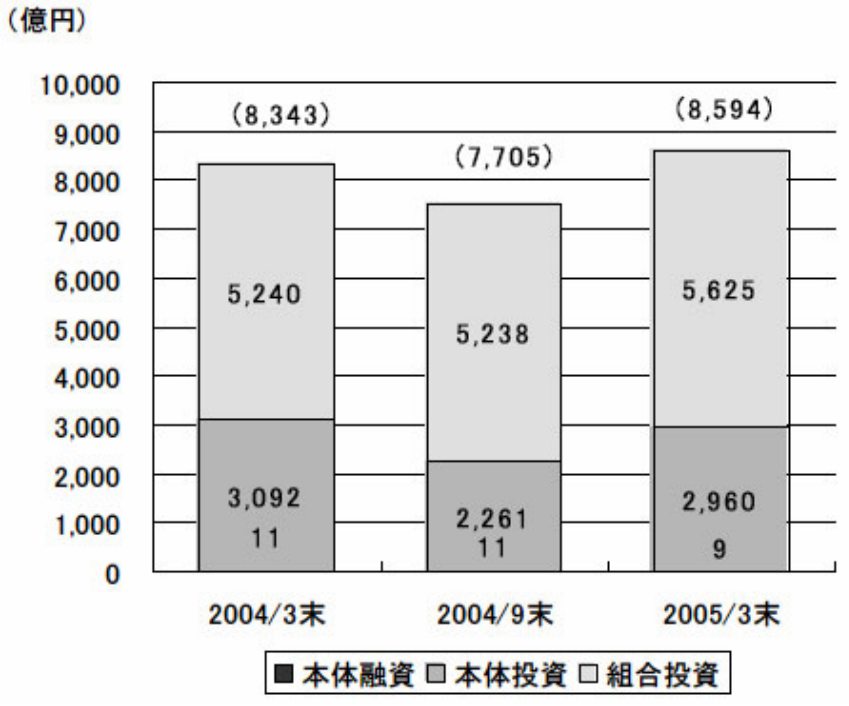
Ritter, “Some Factoids about the 2004 IPO Market

# Role of VC in Financing Innovations: Theory

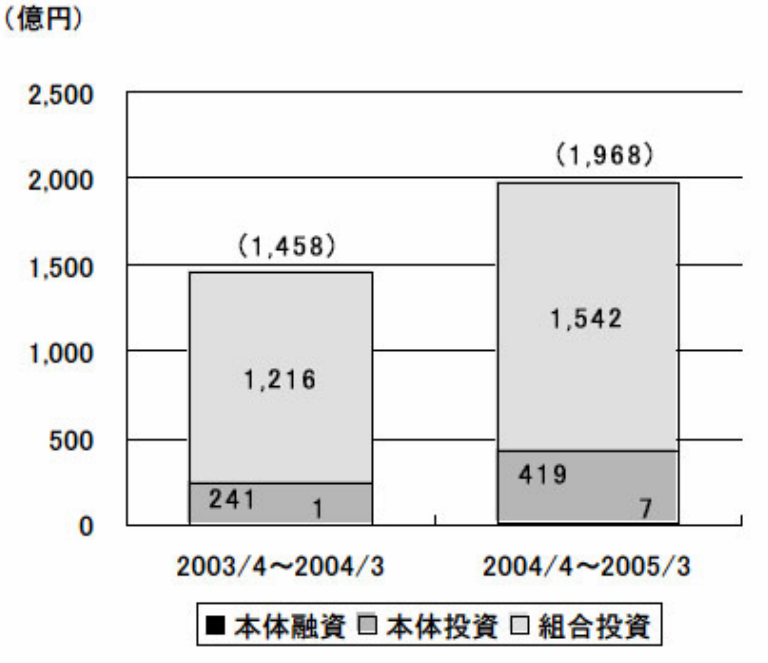
- Ability to screen technical project. (Chan, 1983; Ueda, 2004)
- Ability to monitor the progress of technical projects. (Michelacci and Suarez, 2004)
- Ability to enhance value of the portfolio firms. (Hellmann, 1998; Cassamatta, 2004) $\Rightarrow$ Circumvent "underinvestment problems".

# Size of Recent Japanese VC Investments

図表 1-1：VC 投融資残高推移




図表 2-1：VC 年間投融資額推移

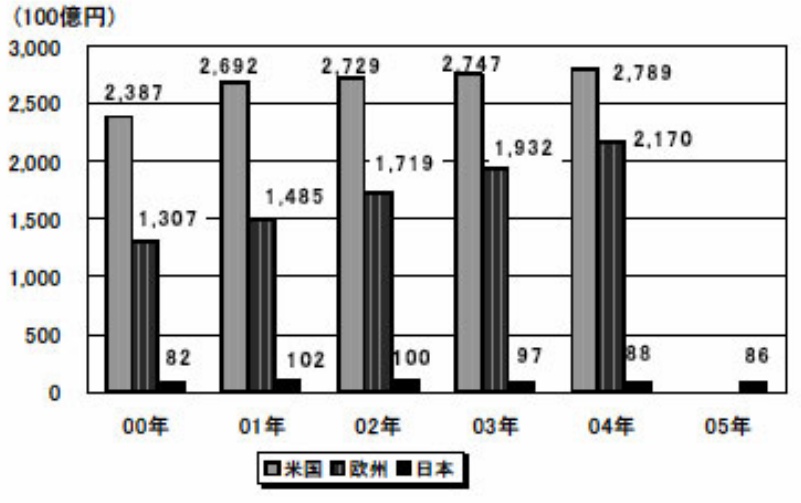



Source: Venture Capital Center
「平成17年度ベンチャーキャピタル等投資動向調査報告」

# Comparison to US and EU

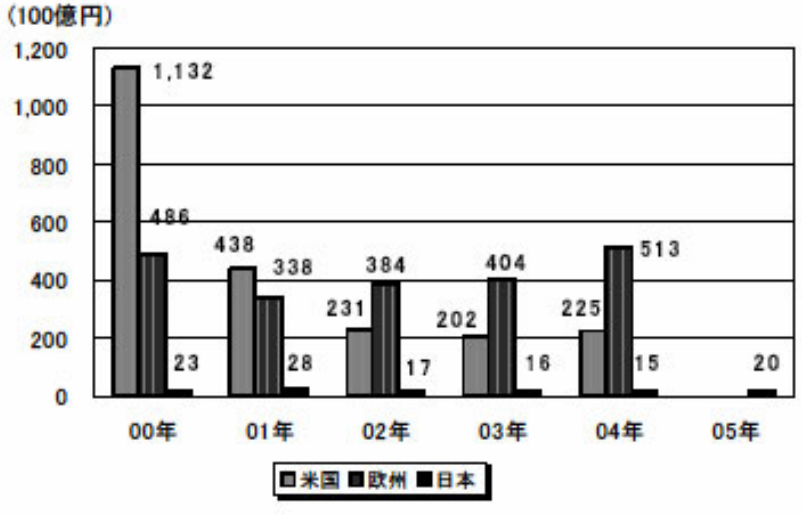
- Japanese VC Investment is very small relative to US and EU.

図表 5-1：日米欧 VC 投資残高の推移




(資料)米国はNVCA 2005 Yearbook(1$=107円換算)、欧州は2005 EVCA Yearbook(1ユーロ=139円換算)、日本は各年報告書による。

図表 5-2：日米欧 VC 年間投資額の推移

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**Source: Venture Capital Center**
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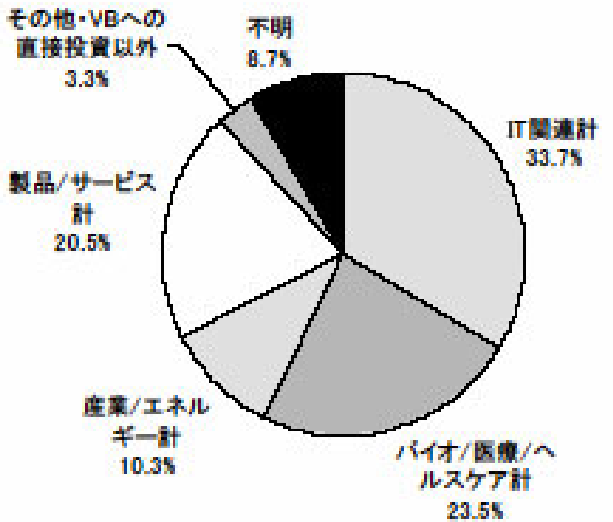
# VC Investments by Sector

- More than 50% on Information Tech and Bio Tech.

図表 2-11：新規投資先企業の業種分布（金額比率）




Source: Venture Capital Center
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# Japanese VCs

- Majority is subsidiaries of securities firms, banks, and insurance companies. (⇔ Independent in the US)
- Hands off (⇔ Hands on in the US)
  - Anti-trust law used to prohibit Japanese VCs to join the board of directors at their portfolio firms.
- Aggressive investment without careful due diligence
- Emphasis on later-stage investment and guidance to going public. (⇔ Management Assistance in the US)

# Challenges of Japanese VCs

- **Recent Increase of early stage investments**
- **Needs cultivating grounds for hands-on venture capitalists. (Human Capital!)**
  - Independence from parent company (management & human resources)
- **Reporting and disclosure to investors**
- **Needs to solve conflict of interests**
  - Parent's direct investment versus partnership investment ➔ Only partnership investment?
  - VCs' motive for higher market share versus investors' motive for higher returns ➔ Covenants to restrict the number and the size of funds?

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