Outline

1 Venture Capital Framework

2 Motivations for Staging
   - Project Characteristic vs. Real Options
   - Information Generation
   - Agency Problems
     - Moral Hazard
     - Hold-Up
     - Adverse Selection
   - Diversification vs. Specialization

3 Costs of Staging
   - Window Dressing
   - Project Delay
The Venture Capital Framework

- Two players: Entrepreneur (E) and Venture Capitalist (VC)
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Complete information vs. information asymmetries

Decision faced by the VC: How to organize the investment into the entrepreneur’s firm (staged financing vs. lump-sum financing, if stages how to structure them)
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  - Financing is only provided if certain thresholds are reached
Empirical Evidence

Kaplan and Strömb erg (2004) state that external risk is associated with tighter staging, in the sense of a shorter period between financing rounds.

Li (2008) notes that the portfolio company will receive the staged financing much later when there is a higher level of market uncertainty.
Empirical Evidence

Kaplan and Strömberg (2004)
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Information Generation

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- Investment can produce valuable information about the profitability of a project.
- However, if all the funding is provided up-front, then the generated information cannot be used in the negotiation of later financing rounds.
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Waiting is not valuable since the uncertainty does not automatically clear up over time.
Investment can produce valuable information about the profitability of a project.
However, if all the funding is provided up-front, then the generated information cannot be used in the negotiation of later financing round.
Thus, staging the investment can balance this trade-off.
Information Generation

Theoretical Modeling
Information Generation

Theoretical Modeling

Pindyck (1993)
Information Generation

Theoretical Modeling

Pindyck (1993)
Roberts and Weitzman (1981)
Empirical Evidence

Kaplan and Stromberg (2003) ex ante staging is more common in earlier rounds.

Li (2008) The funding duration for a Seed/Startup-stage company is 10% shorter than that for an expansion- or late-stage company.

Further evidence: Sahlman (1990)
Empirical Evidence

Kaplan and Stromberg (2003)
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- Financing can also be made contingent on reached milestones
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If the VC holds a claim on the portfolio firm that is senior to E’s claim then there is a asset substitution problem.
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- If you view staged financing as a compounded option, it can be shown that the chance to obtain funding in later rounds (exercise of one of the compounded options) is higher at higher risk levels
- Thus, staging can help to mitigate the agency issue that E want’s to take overly conservative actions
Agency Problems - Moral Hazard

Theoretical Modeling
Agency Problems - Moral Hazard

Theoretical Modeling

Bergemann and Hege (1998)
Agency Problems - Moral Hazard

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Agency Problems - Moral Hazard

Theoretical Modeling

Bergemann and Hege (1998)
Hsu (2008)
Agency Problems - Moral Hazard

Empirical Evidence
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Empirical Evidence

Gompers (1995)
Venture capitalists weigh potential agency and monitoring costs when determining how frequently they should reevaluate projects and supply capital.
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Kaplan and Strömberg (2004)
Agency Problems - Moral Hazard

Empirical Evidence

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Ex ante staging using explicit milestones is related to internal risk.

Further evidence: Kaplan and Stromberg (2003), Hege et al. (2003), Krohmer et al. (2009), Li (2008), and Sahlman (1990)
Agency Problems - Hold-Up

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- Early financing rounds generate collateral that can support later rounds
Agency Problems - Hold-Up

Theoretical Modeling
Agency Problems - Hold-Up

Theoretical Modeling

Neher (1999)
Agency Problems - Hold-Up

Empirical Evidence

Sahlman (1990)
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Agency Problems - Adverse Selection

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- Staging can be used as a screening device to distinguish between both types
- Since the entrepreneur faces the risk of project abandonment by the VC following bad news, bad managers are less likely to select a staged contract
Agency Problems - Adverse Selection

Theoretical Modeling
Agency Problems - Adverse Selection

Theoretical Modeling

Diamond (1991)

For the decision to finance with short-term or long-term debt
Agency Problems - Adverse Selection

Empirical Evidence

Kaplan and Strömborg (2004) 
Ex ante staging using explicit milestones is related to internal risk. This is consistent with ex ante staging being away for good firms to signal their type (or for VCs to screen out bad firms), similar to the way short-term debt is used...

Hege et al. (2003) 
US VCs have better screening skills... than their European counterparts.
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Diversification vs. Specialization

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- Since funds should be disbursed quickly and due to the limited lifetime of a VC fund, it is not possible to achieve diversification across stages by investing in ventures that mature at different rates.
Diversification vs. Specialization

1. **Diversification**

   - Staging can be used to hold a portfolio of investments that are diversified across stages which may give better risk/return characteristics.
   - Since funds should be disbursed quickly and due to the limited lifetime of a VC fund, it is not possible to achieve diversification across stages by investing in ventures that mature at different rates.
   - Achieving diversification via selling stakes in later-stage projects could also be problematic since this sends a negative market signal and valuable information, which VCs acquire over time would be lost during a transfer of ownership.
Financing stages are usually linked to important steps in the venture's development process (e.g., design completion, development of a patent or a prototype, development of the product to a marketable stage, marketing activities, etc.). If, besides providing capital, VCs do also provide advice and services, they might specialize in stages where they have a competitive advantage. Thus staged financing occurs because of the specialization of VCs on certain stages in the venture’s life cycle.
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*Venture-capital firms tend to specialize by industry or stage of investment.*
Diversification vs. Specialization

Empirical Evidence

Dean and Giglierano (1990)
- VC do not specialize, but, rather, create unique portfolio strategies.

Hege et al. (2003)
- Relationship financing (measured by early continuity, average continuity, and the presence of at least one VC in all rounds) is significantly more important in Europe than in the United States...
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- Window dressing likely sacrifices long term profit for a good short term signal.
- Window dressing also reduces the information content of the signal that is used by the VC to determine whether or not to disburse additional funding.
Window Dressing

Theoretical Modeling
Theoretical Modeling

Cornelli and Yosha (2003)
Empirical Evidence

Krohmer et al. (2009) indicates that fund managers may window dress their portfolio to impress sponsors, injecting just enough cash to keep losing projects afloat.
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[...] fund managers may be “window dressing” their portfolio to impress sponsors, injecting just enough cash to keep losing projects afloat.
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Withholding funds might delay the growth of the venture as the entrepreneur needs to “waste” his time assembling information used in the financing process. This would be especially costly if there is strong competition.
Empirical Evidence

Li (2008) states that the portfolio company will receive the staged financing much sooner when a larger number of VC firms compete in the same industry.

Dean and Giglierano (1990) report a delay in the introduction of a new product due to failure in finding financing.
Empirical Evidence

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Dean and Giglierano (1990)

 [...] 25% reported a delay in the introduction of the new product that was due to delay or failure in finding financing.
Thank you for your attention


