

Venture Capital and the Finance of Innovation

Professor David Wessels, the Wharton School of the University of Pennsylvania

FNCE 250/750 Fall 2009 (JMHH G55)

This course will focus on the funding, valuation, and capital structure design related to venture capital and high growth, privately held companies.

- We start by outlining **how venture capital funds are organized**, how and from whom they raise capital, and in what type of firms they typically invest. A good portion of the section will **examine the risk return profile of venture capital** and whether venture capital “beats the market,” whether it lowers risk of the limited partner’s portfolio, and how the high uncertainty of growth firms should be priced.
- The **second section** of the course will examine corporate valuation and value drivers. Given the incredible uncertainty associated with high-growth companies, alternative methods such as **key value driver models and comparable transactions** must be employed to triangulate results. Special attention will be given to the valuation process for small, illiquid, high-growth companies versus mature companies. For instance, how do you bound reasonable estimates of revenue growth, margins, and capital productivity when little historical data is available?
- The **third section** of the course will examine valuation techniques necessary to **value complex securities** associated with venture capital and high growth companies. Preferred stock held by venture capitalist has conversion features that resemble a combination of debt and equity. Therefore, options models must be employed to determine their true (versus fully-diluted) value.
- During the **final section** (time permitting), we discuss **valuing uncertainty using real options**. Real options combine decision trees with options valuation theory from the financial markets (i.e. calls, puts, and forwards). Real options are becoming increasingly popular in both companies and venture capital.

Complementary Classes: The class will focus on the financial aspects of valuing and funding high growth companies. A **critical skill** to venture capital that we will NOT cover is screening and selecting potential

investments using business plans. For more on this topic, I highly recommend Entrepreneurship MGMT 230) and Venture Capital and Entrepreneurial Management (MGMT 264).

Reading Material

The course will rely on a textbook and a few supplemental readings (which can be found on webcafe). The textbook can be purchased in the campus bookstore or on Amazon.com:

Venture Capital and the Finance of Innovation by Andrew Metrick, 2007, John Wiley & Sons, Inc, NY.

The course will also rely on chapters from a secondary text:

Valuation: Measuring and Managing the Value of Companies (4rd Ed) by Koller, Goedhart, and Wessels, 2005, John Wiley & Sons, Inc, NY.

Chapters from Valuation will be provided for you on webcafe. Lecture notes will be distributed in class and will also be available on webcafe. There will be a lot of additional material (mostly lecture notes), so please purchase a binder for course slides and articles.

Assignments & Exams

There will be three individual assignments, two group projects, and two mid-semester exams. There will be no final exam. For group work, please self select groups of between 3-5 people, no exceptions. If you have six people, create two groups of three. Also, you can form teams across sections.

Class participation will not formally be scored, but students at the grading cutoffs will be evaluated for their ability to generate an active and positive class environment. The grading breakdown will be as follows:

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| 1. Individual Assignment: Raising Capital | 5% |
| 2. Group Project 1: Due Diligence | 10% |
| 3. Exam I (10/26/09, in-class) | 20% |
| 4. Group Project 2: Private Company Valuation | 15% |
| 5. Individual Assignment: Capital Structure | 5% |
| 6. Exam II (12/2/09, 6-8pm) | 40% |

7. Individual Assignment: Real Options

5%

Project due dates will be announced when the assignment is distributed, but no earlier than 3 class sessions in the future.

Office Hours & Teaching Assistants

I will hold walk-in office hours on Wednesdays from 4:30 – 6pm and office hours by appointment from 6-7pm. I am still constructing the TA team and will post office hours for TAs shortly.

E-Mail Etiquette: Questions related to the assignments or on course fundamentals should be sent to the teaching assistants. To avoid grading discrepancies (i.e. what is required, etc), I will do my best NOT to answer questions concerning the assignments. Questions on theory, advanced analysis, or topics outside of the course should come directly to me. To assure a timely response, always include a call-back phone number in your e-mail.

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Course Schedule

| | Note | Date | Session Topic | Associated Reading |
|-----------------------|------|---------|--|--|
| Venture Capital Funds | 1 | 9/9/09 | Course Overview | Metrick Chapter 1 |
| | n/a | 9/14/09 | No Class | No Reading |
| | 2 | 9/16/09 | Introduction to Venture Capital: The Venture Capital Cycle & Industry Statistics | NVCA 2009 Yearbook, Pages 7-13 (webcafe) |
| | n/a | 9/21/09 | No Class | No Reading |
| | 3 | 9/23/09 | Raising LP Capital: Limited Partners, LP Agreements, and LP Reporting | Metrick Chapter 2 |
| | 4 | 9/28/09 | The Cost of Equity for VC-backed Start-Ups: How the CAPM applies to | Metrick Chapter 4 |

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| | | | VC & Founders – <i>Class will be taped for those observing Yom Kippur</i> | |
| | 5 | 9/30/09 | Venture Capital Returns: Are High Hurdle Rates Justified? Empirical Evidence | Metrick Chapter 3 |
| | 6 | 10/5/09 | Choosing Amongst VCs: Measuring Firm Performance and Persistency of Venture Capital Performance | Metrick Chapter 5 |
| Valuing High Growth Companies | 7 | 10/7/09 | Corporate Strategy & Value Creation: Key Value Drivers | Valuation 4 th Edition Chapter 3 |
| | 8 | 10/12/09 | Corporate Strategy & Value Creation:: Dynamic ROIC and Cash Burn Models | Valuation 4 th Edition Chapter 6 |
| | 9 | 10/14/09 | Venture Capital Valuation: Market Sizing | TBD |
| | 10 | 10/19/09 | Venture Capital Valuation: Big Picture DCF | Metrick Chapters 10-11 |
| | 11 | 10/21/09 | Venture Capital Valuation: Advanced Issues for High Growth Companies (<u>if time permits</u>) | Valuation 5 th Edition (forthcoming): Capitalized Expenses |
| | n/a | 10/26/09 | EXAM I: In Class | No Reading |
| | 12 | 10/28/09 | Using Comparable (Multiples) to Bound the Valuation | Metrick Chapters 12 |
| Term Sheets, Capital Structure & Financing Growth | 13 | 11/2/09 | Term Sheets: Matching VC Needs with Entrepreneurial Incentives | Metrick Chapter 8 |
| | 14 | 11/4/09 | Term Sheets: Security Design and Capital Structure in VC Backed Firms | Metrick Chapter 9 |
| | 15 | 11/9/09 | Term Sheets: Down Rounds and Anti-Dilution Provisions | The Venture Capital Anti-Dilution Solution" Wilson Sonsini |
| | 16 | 11/11/09 | Fundamentals of Options Pricing | Metrick Chapter 13 |
| | 17 | 11/16/09 | Valuation of Series A Preferred | Metrick Chapter 14 |
| | 18 | 11/18/09 | Valuation of Later Rounds | Metrick Chapters 15 & 16 |

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| | 19a | 11/23/09 | Going Public: IPO Process, Book building & Auctions | A Guide to the Initial Public Offering Process (Ellis, Michaely & O'Hara) |
| | 19b | 11/25/09 | Going Public: Underpricing & VC Grandstanding (if time permits) | A review of IPO Activity, Pricing, and Allocations (Ritter & Welch) |
| Exam II Preparation | n/a | 11/30/09 | No Class: Exam II Preparation | No Reading |
| | n/a | 12/2/09 | No Class: Exam II from 6-8pm on 12/2/09 | No Reading |
| Financing Innovation in Large Companies | 20a | 12/7/09 | Real Options: Decision Trees vs. Options Pricing | Metrick Chapters 21 & 22 |
| | 20b | 12/9/09 | Real Options: Building a Portfolio of Options | Entrepreneurial Mindset (McGrath and MacMillan) |