

Venture Capital & the Finance of Innovation

Fall 2018

Professor David Wessels

Department of Finance, the Wharton School

This course will focus on the primary activities performed by venture capital professionals, including how they raise capital, how they structure their funds, as well as how they select, fund, and exit 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 great uncertainty associated with 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, operating 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 economic (versus fully-diluted) value.

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 cover *only briefly* is screening and selecting potential investments. To develop a well-rounded skill set, I recommend Entrepreneurship (MGMT 231/801) and Venture Capital and Entrepreneurial Management (MGMT 264/804).

Reading Material

The course will rely on a textbook and supplemental readings. The textbook can be purchased in the campus bookstore or online:

Venture Capital and the Finance of Innovation (2nd edition) by Andrew Metrick and Ayako Yasuda, 2011, John Wiley & Sons, Inc, NY.

The course will also rely on supplemental readings. Supplemental readings are meant to complement a particular lecture. Please note that the readings will not match the classroom content perfectly. Instead, they are meant to provide you with helpful language and context. Most readings are just a few pages. Supplemental readings can be found on canvas under Files/Readings.

Reading	Name
Reading 1	Pitchbook Annual Report, Pages 5-9 and 46-56 (as needed)
Reading 2	Evergreen Funds
Reading 3	Private Equity Performance: Pages 1791-1974
Reading 4	Thinking about ROIC and Growth
Reading 5	Is My Startup Burn Rate Normal?
Reading 6	Why Unicorns are Overvalued
Reading 7	CooleyGo on down rounds
Reading 8	CooleyGo on convertible debt primer
Reading 9	CooleyGo on convertible debt caps

In-Class Requirements

Please bring three items to EVERY class: your name tent, the lecture's notes, and a basic calculator. As the semester progresses, please remain diligent. I tend to be relentless with those who come to class empty-handed.

Lecture notes: I strongly recommend BUYING the lecture notes (or printing the entire deck). The lecture notes are sold at printing cost by Campus Copy. We will use the lecture notes to complete problem sets in class. If you prefer to print your own notes lecture-by-lecture, I understand; but trust

me, many of you will be less organized / prepared than your classmates who have a complete well-structured set of notes!

Assignments & Grading

There will be three individual assignments (15% total), two group projects (20% total), and two exams (30% and 35% respectively). For individual assignments, I expect you to work alone and hand in your own work. You can discuss class tools, but not the assignment. For group work, please self-select groups of between 3-5 people, no exceptions. If you have six people, create two groups of three. You can switch groups between projects, but this is NOT recommended. For classes with multiple sections, you can form groups 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 assignment/exam due dates and grading breakdown will be as follows:

	Assignment/Exam	Due Date	Grade
1	Individual Assignment: Portfolio Review	9/20/2018	5%
2	Individual Assignment: LP/GP Contracts	9/27/2018	5%
3	Midterm (in class)	10/9/2018, in-class	30%
4	Group Project: Strategic Assessments	11/1/2018	5%
5	Group Project: Private Company Valuation	11/15/2018	15%
6	Individual Assignment: Term Sheets	12/4/2018	5%
7	Final Exam (during finals week)	Friday 12/14/2018 @6pm	30%

Teaching Assistants & Office Hours

We have four teaching assistants for the class. If you have questions concerning assignments or practice exams, please e-mail your primary TA first. If they are out of town, only then reach out to the other TAs. Again, all questions concerning assignments and practice exams will be redirected to TAs, so start there!

If you have questions about the course notes or content beyond the class, please come see me during office hours.

9:00am Section TA: Vlad Makarkin at vladm@wharton.upenn.edu

10:30am Section TA: Akanksha Santdasani at akans@wharton.upenn.edu

Office Hours: The TAs will be holding office hours on Mondays at 12pm in SHDH 2300/2400. I will be holding office hours on Tuesdays 1:30-3:00pm in SHDH 2422 and by appointment.

Regrade policy. All regrade requests must be submitted in TYPE and emailed to your primary TA within ten calendar days following the return of your graded work.

Academic Integrity

I expect you to follow Penn's code of academic integrity when completing problem sets, group work, and exams. Allegations of impropriety should be brought directly to me, which in turn will be referred to the University Honor Council. For more, see:

http://www.upenn.edu/academicintegrity/ai_codeofacademicintegrity.html

I look forward to meeting each and every one of you this semester! Best, Prof. Wessels.

Venture Capital and the Finance of Innovation

Course Schedule

Section	Week	Date	Note		Reading
Course Introduction	1	8/28	1	Course Overview & Industry Statistics	Reading 1
		8/30	2	The Venture Capital Cycle	Metrick 1
Section 1: The Limited Partner's Perspective (Metrick Chapters 2-5)	2	9/4	3	Raising LP Capital: Organization Structure	Metrick 2.1, 2.2 and 5
		9/6	4	Raising LP Capital: Partnership Compensation	Metrick 2.3
	3	9/11 & 9/13	n/a	No Class: Make up on Friday, November 3	No Reading
	4	9/18	5	Theory: Risk and Return for LPs	Metrick 4.1 - 4.2
		9/20	6	Theory: Risk and Return for Founders	No Reading
	5	9/25	7	In Practice: Does VC beat the market?	Metrick 3.1 and 4.3
		9/27	8	Choosing amongst funds: Performance Metrics	Metrick 3.2
	6	10/2	9	Choosing amongst funds: Persistence of Performance	Reading 3
Break & Exams		10/4	n/a	No Class: Fall Break	n/a
	7	10/9	n/a	Midterm	n/a
Section 2: Valuation and Analysis of High Growth Companies		10/11	10	Screening Startup Opportunities (Virtual)	Metrick 7
	8	10/16	11	Key Value Drivers: Evaluating High Growth Companies	Reading 4
		10/18	12	Key Value Drivers: Cash Burn	Reading 5
	9	10/23	13	Keeping it Simple: Startup Valuation in Practice	Metrick 10
		10/25	14	Robust Valuation: Unit Economics, Revenue Models	Metrick 11
		Makeup	15	Using Multiples to Triangulate Value (11/2, 10-12pm)	Metrick 12
Section 3: Term Sheets, Capital Structure & Financing Growth	10	10/30	16	Term Sheets: Valuation and Employee Options	Metrick 8
		11/1	17	Term Sheets: Preferences and Other Key Items	Reading 6
	11	11/6	18	Term Sheets: Capital Structure	Metrick 9
		11/8	19	Term Sheets: Down Rounds	Reading 7
	12	11/13	20	Fundamentals of Options Pricing	Metrick 13
		11/15	21	Valuation of Series A: Using the Model	Metrick 14, 17
	13	11/20	22	Valuation of Series A: How VCV Works	No Reading
		11/22	n/a	No Class: Thanksgiving	Metrick 15.1-15.2
	14	11/27	23	Valuation of Series B	Metrick 15.1-15.2
		11/29	24	Series C and Beyond	Metrick 15.3-15.5
15	12/4	25	Angel Financing	Readings 8 & 9	
		12/6	n/a	Catch-Up & Review	No Reading