

Venture Capital & the Finance of Innovation

Fall 2019 in SSF

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	NVCA Annual Report, Pages 5-9 and 48-59 (as helpful)
Reading 2	Evergreen Funds
Reading 3	Private Equity Performance: Pages 1791-1974
Reading 4	Thinking about ROIC and Growth
Reading 5	Calculating Burn Rates and 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.

Assignments & Grading

There will be three individual assignments (15% total), two group projects (25% total), and a final exam (60%). 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	Expected Due Date	Grade
1	Individual Assignment: LP/GP Contracts	9/17/2019	5%
2	Individual Assignment: Portfolio Review	9/24/2019	5%
3	Group Project: Strategic Assessments	10/22/2019	10%
4	Group Project: Private Company Valuation	11/5/2019	15%
5	Individual Assignment: Term Sheets	11/12/2019	5%
6	Final Exam	11/20/2019 (9-11am)	60%

If necessary, superseding due dates will be posted to canvas. They will follow the schedule above unless we have not covered the relevant material. The final exam is fixed and will not change. Please make the appropriate accommodations as we cannot accommodate alternative testing dates.

Teaching Assistants & Office Hours

The TA for VC in San Francisco will be **Li Wei** <liwei18@wharton.upenn.edu>. We also have support from Chris Mohr <cgmohr@wharton.upenn.edu> and David Pease <peased@wharton.upenn.edu>.

If you have questions concerning assignments or practice exams, please e-mail your primary TA first. If she is out of town, only then reach out to 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.*

Office Hours: Given the co-location of everyone in a small working space, Li will hold office hours by appointment. Just let her know when you need to meet. I will be available most days before class, or between classes when double-sessions are scheduled. End of day, we can chat, but I am often wiped!

Regrade policy. All regrade requests must be submitted in TYPE and emailed to your primary TA within 10 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:

<https://catalog.upenn.edu/pennbook/code-of-academic-integrity/>

The most common violation is turning in another person's work, which results in a semester-long suspension by the University. This course is meant for you, make sure it reflects your contributions!

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	Notes	Reading	
Section 1: The Limited Partner's Perspective	1	Monday 9/9/2019	1	Course Overview & Industry Statistics	Reading 1
			2	The Venture Capital Cycle	Metrick 1
			3	Raising LP Capital: Partnership Compensation	Metrick 2
			4	Theory: Risk and Return for LPs	Metrick 4.1 - 4.2
	2	Monday 9/30/2019	5	Theory: Risk and Return for Founders	No Reading
			6	In Practice: Does VC beat the market?	Metrick 3.1 and 4.3
			7	Choosing amongst funds: Performance Metrics	Metrick 3.2
			8	Choosing amongst funds: Persistence **	Reading 3
Section 2: Valuation and Analysis of High Growth Companies	3	Monday 10/14/2019	9	Screening Startup Opportunities	Metrick 7
			10	Key Value Drivers: Evaluating High Growth Companies	Reading 4
			11	Key Value Drivers: Cash Burn	Reading 5
			12	Keeping it Simple: Startup Valuation in Practice	Metrick 10
	4	Monday 10/21/2019	13	Robust Valuation: Unit Economics, Revenue Models	Metrick 11
			14	Using Multiples to Triangulate Value **	Metrick 12
			15	Term Sheets: Valuation and Employee Options	Metrick 8
			16	Term Sheets: Preferences and Other Key Items	Reading 6
Section 3: Term Sheets, Capital Structure & Financing Growth	5	Monday 11/4/2019	17	Term Sheets: Capital Structure	Metrick 9
			18	Term Sheets: Down Rounds	Reading 7
			19	Fundamentals of Options Pricing	Metrick 13
			20	Valuation of Series A: Using the Model	Metrick 14, 17
	6	Monday 11/18/2019	21	Valuation of Series A: How VCV Works	No Reading
			22	Valuation of Series B	Metrick 15.1-15.2
			23	Series C and Beyond (time permitting) **	Metrick 15.3-15.5
			24	Angel Financing	Readings 8 & 9

** I prefer to let the natural flow of the class dictate pace. If we fall behind, the lecture on individual fund performance, using multiples, or Series C financing will be shortened or eliminated.