University of Pennsylvania - The Wharton School

Venture Capital and the Finance of Innovation

FNCE 750-001 (MBA), TR 10:30, HH G55
FNCE 750-002 (MBA), TR 1:30, HH G55
Fall 2004

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SUMMARY

The course covers the finance of technological innovation, with an emphasis on the financial tools useful in the venture capital industry. The primary audience for this course is finance majors interested in careers in venture capital or in R&D-intensive companies in health care or information technology. There are six case memos, a valuation problem set, a midterm (10/18), and an optional final (12/22).

GOALS OF THE COURSE

After completing this course, students should understand deal structure and valuation for a broad range of venture capital transactions and R&D investments.

MATERIALS

There is no textbook for the course. All assigned readings are available in the three coursepacks. Coursepack 1 includes all the case assignments and background material. Coursepacks 2 and 3 contain chapters from the draft of the textbook Venture Capital Valuation. Coursepack 2 contains Chapters 4 and 9; Coursepack 3 contains Chapters 10 – 15. Coursepacks 1 and 2 are available now from Reprographics; Coursepack 3 will be available in October. The cost of additional handouts distributed in class is not included in the cost of these coursepacks and will be billed separately at the end of the semester. All spreadsheets and materials handed out in class (except copyright items) will be made available after class at the course's webCafé.

FORMAT

Students will form into self-selected two- or three-person partnerships at the beginning of the semester. For every case, each partnership will designate one person as "managing partner" (MP); the MP will turn in a two-page report (plus up to three pages of supporting calculations) for the partnership. Details about the style and substance of these reports are given in the last part of this syllabus. All students are expected to participate in class discussion; MPs should prepare to be cold-called. If an MP has to miss class for some reason, then another partner must take his or her place in class discussion. Each student must serve as MP at least twice during the semester.

GRADING

There are four components to the grading:

Case Memos (30% of overall grade): two-page memos (plus up to three pages of supporting calculations), handed in by each partnership for each case. All teams that hand in a competent memo and have an MP prepared for class will receive full credit for the case. Teams missing either of these elements will receive half credit. Teams missing both elements will receive no credit. I expect that most teams will receive full credit on all the cases. Some exceptional case memos will receive bonus credit. This will never exceed 5 percent of the teams on any memo.

Problem Set (10% of overall grade): The problem set covers the basics of valuation that should be mastered by all students before the job interviewing season begins. Each team hands in one problem set – there is no MP for this assignment. Due on October 5.

Midterm (30% of overall grade): October 18, 6:00 PM to 8:00 PM.
This closed-book exam will cover total valuation, term sheets, and basic option-pricing. There are a limited number of slots available to take the exam between 4 and 6 PM on 10/18. If you have a conflict from 6 to 8 but are available from 4 to 6, please let me know ASAP to reserve a place. Students who do not take the exam at one of these times will have a make-up exam consisting of a mock interview on the exam topics.

Final Exam (30% of overall grade): December 22, 1:30 PM to 3:30 PM. (Sorry about this date – it was not my choice.) This closed-book exam is optional. Students who do not take the final will receive a grade based only on their case reports, problem set, and midterm, and cannot receive a course grade higher than "Pass". For students who do take the exam, we will compute a course grade both with and without the final, and then give the higher grade of the two. (If you take the final but we do not count it, then you cannot receive a course grade higher than "Pass".)

SCHEDULE
Note: Readings from Coursepacks 2 and 3 are given as “VCV, Chapter Z”. All other readings are in Coursepack 1.

I. Introduction

9/9 - Course Overview: Introduction to the Finance of Innovation

9/14 - Lecture: The State of the Global Venture Capital Industry

Reading: The Private Equity Industry: An Overview, Sections I, IV, and V

9/16 – Lecture: The Returns to Venture Capital Investing

9/21 – Case: Accel VII

Reading: A Note on Private Equity Partnership Agreements
A Glossary of Key Terms and Conditions for PE Investing
Due: Memo #1 and Partnership Agreements

9/23– Lecture: The Venture Capital Method

Reading: VCV, Chapter 4

9/28 – Lecture: Absolute and Relative Valuation

Reading: A Note on Valuation in Private Equity Settings

9/30– Lecture: Term Sheets

Reading: A Note on Private Equity Securities

10/5– Lecture: Option Pricing for VC

Reading: VCV, Chapter 9
Due: Valuation Problem Set

10/7 – Lecture: Real Options and R&D decisions

Reading: Real Options, Chapter 4 (skip pp. 95-106)

10/12 – Case: Merck & Company: Product KL-798

Due: Memo #2

10/13 – [WEDNESDAY] Guest speaker, Mark Chandler, BTG

Topic: Licensing and R&D, room and time TBA

10/14 – NO CLASS – Midterm Review Session, room and time TBA

10/18 – [MONDAY] MIDTERM EXAM, 6 – 8PM, rooms to be announced.

10/19 – NO CLASS

10/21 – Lecture: Partial Valuation and the Investment Decision

Reading: VCV, Chapter 10

10/26 – NO CLASS, fall break

10/28 – Lecture: Preferred Stock

Reading: VCV, Chapters 11 and 12

11/2 – Lecture: Series B and Beyond

Reading: VCV, Chapter 13

11/4 – Lecture: Transaction Valuation

Reading: VCV, Chapter 14

11/9 – Case: Walnut Ventures

Due: Memo #3

11/11 – Lecture: Participating Convertible Preferred Stock

Reading: VCV, Chapter 15

11/16 – Case: Metapath Software

Reading: Securicor Wireless Systems (background for Metapath.)
Due: Memo #4

11/18 – Lecture: Monte Carlo Simulation

Reading: <u>Spreadsheet Modeling and Decision Analysis</u>, Chapter 12
(especially pages 602 – 622)

11/23 – Case: Scor-eStore.com

Due: Memo #5

11/25 – THANKSGIVING BREAK

11/30 – Lecture: Alliances and Joint Ventures

Reading: A Note on Strategic Alliances

12/2 – Guest speaker, Izhar Armony, Charles River Ventures
Topic: Early-stage venture capital, Room and Time TBA

12/7 – Case: Genzyme/Geltex Pharmaceuticals Joint Venture

Due: Memo #6

12/9 – Lecture: Summary and Review: What have we learned?

12/22 – FINAL EXAM: 1:30 – 3:30 PM

Study questions for class discussion and case memos

This document contains some suggested study questions for the cases covered in *Venture Capital and Private Equity*. These questions will be used as a framework for classroom discussion, but they are not an exhaustive list, and in some class meetings we may deviate far from the framework. Questions marked with a (*) require some quantitative analysis and/or investment recommendation; all memos must include specific answers to these questions. Beyond this requirement, the content of the case memos is left to your discretion, and there is no requirement (or suggestion) that you "answer" the other questions or restrict yourself to them. You should feel free to address any other issues that seem relevant. Your memos should not be longer than two pages (single-spaced), plus up to three pages of supporting calculations (e.g., printouts of spreadsheets and assumptions.) The memos should be well organized and easy to read.

There are a limited number of good cases on Venture Capital and Private Equity, and only a few new ones are produced each year. Thus, many cases remain constant from year to year. In such instances, some instructors will not publish any of their spreadsheets or presentations, lest these materials end up in the hands of future students. I have not chosen this path, because it seems like too large a sacrifice to learning. Instead, I want to stress that any reliance on such materials is a form of plagiarism and will be prosecuted to the fullest extent of the law. The vast majority of students are honest and this is the only policy that is fair to them. In order to further reassure the honest students that they will not be penalized in comparison with dishonest students, the grading system is designed so that all good-faith efforts on the case memos will result in full credit. Thus, we expect that most groups will be able to achieve full credit on the case portion of the overall grade.

Accel VII

For their seventh fund, a successful venture-capital firm is raising their carried interest to 30 percent, as compared to the industry standard of 20 percent. A limited partner in previous funds is thinking about whether they should invest in this new one.

Study questions for class discussion and Memo #1

(see spreadsheet, accel.xls)

1) What is the typical incentive structure in Private Equity Partnerships (PEPs)? Why do you think we see this structure?

2) How does Accel compare to other managers? Do you believe that there is an economic rationale for expecting continued success in the future?

3) What is Accel's motivation for raising the carried interest? Do they have any other methods to solve these problems?

4) (*) What are the implications of the shift from a 20% carried interest and 2.5% annual management fee to a 30% carried interest and a 2.5% annual fee? In particular, what is the present value of Accel's compensation and the IRR and present value to the limited partners under the different fee structures as a function of Accel's gross returns? How much better does Accel have to be than the "typical" VC fund in order to justify the greater carry? See the spreadsheet accel.xls for "Question 5 assumptions". These assumptions are slightly different than the exact structure described in the case for Accel VII. You should assume that 100% of the capital comes from the LPs – not just 99% as discussed in Exhibit 2.

5) (*) Redo the previous question, but now use the "Question 6 assumptions" from the "accel.xls" spreadsheet. The only change here is for assumption 5 (carried interest). Here you should assume as in page 7 of the case: Accel will "receive its carried interest on any distribution as long as the value of the Accel VII investments exceeded 125% of the invested capital." Use your judgment on how to interpret this rule into the calculations -- there are several reasonable approaches.

Merck & Company: Product KL-798

Merck is considering a licensing deal with Kappa Labs for their KL-798 drug candidate. KL-798 is currently in Phase I trials and has promise for two indications: treating obesity and lowering cholesterol.

Study questions for class discussion and Memo #2

1) (*) Draw the decision tree for Merck. Start with the licensing decision (which includes Phase I trials).

2) (*) Assume that all discount rates and riskfree interest rates are zero. What is the valuation of this licensing deal for Merck? Should they do it?

Walnut Venture Associates

A group of angel investors is considering an investment in a software company. The transaction has less upside than a typical VC deal, so the investors must structure and evaluate it carefully.

Study questions for class discussion and Memo #3

1) How are investment "angels" different from venture capitalists?

2) Why has RBS approached an angel group for this round of financing?

3) What do you think of Walnut's due diligence strategy and implementation?

4) (*) Given the transaction proposed in the term sheet, calculate the pre-transaction valuation of RBS? How does your computation compare to the pre-money valuation numbers discussed by the principals in the case?

5) (*) Suppose that Walnut obtains detailed financials and performs a careful valuation of the entire RBS enterprise. For what total valuation should they be willing to do this transaction? (You do not have to do a valuation – just say what valuation would be necessary to do the transaction proposed in the term sheet.)

6) If you were Bob O'Connor, what concerns would have with this transaction? Would you do the transaction on these terms?

Metapath Software

A software company must decide whether to do another round of private financing or to merge with another company. The structure of the financing transaction raises several issues.

Study questions for class discussion and Memo #4

(For some extra background information on Metapath, see the case "Securicor Wireless Networks" in the bulkpack.)

1) What is Metapath's business? How has it been financed until now?

2) (*) The term sheet (Exhibit 2) gives the Series E investors participating preferred stock at $6 per share. Hansen tried to negotiate the conversion feature away by offering "normal" convertible preferred at $5.50 a share, but RSC declined. Should Hansen offer an even lower price? At what price should RSC accept instead of taking the participation option?

3) Given the competing offers from RSC (Exhibit 2) and CellTech (Exhibit 3), what should Hansen (and the Series A-D investors) do?

NOTES:

1. The case gives conflicting information about the pre-money valuation and about the size of the financing. The text of the case indicates a pre-money valuation of 76M (page 1) and a round size of $11.75M (raised from $10.75M). The term sheet (Exhibit 2) gives a pre-money valuation of $75M (on 12.5M shares outstanding, fully diluted) and a round size of $10.75M. According to the case author, the term sheet is old and was not updated to reflect some extra warrants paid to management that would raise the shares outstanding by about 160K and raise their pre-money valuation to about 76M. The round size was indeed 11.75M. I will work with 76M pre-money valuation and 11.75M round size in class.

2. For the purposes of your calculations, you should begin by ignoring the Series A and B redeemable preferred (by assuming that $87.75M is the value above and beyond the RP), and to assume that that Series C and D has already converted. You can also ignore the dividends that might be earned by the preferred. These assumptions greatly simplify things in do not make much of a difference. After solving this simplified case, you should try to be more ambitious and drop some or all of these assumptions.

SCOR-eSTORE.COM

Memo #5

Questions to be distributed in class

Genzyme/Geltex Pharmaceuticals Joint Venture

Memo #6

Questions to be distributed in class

Venture Capital and Private Equity Fall 2004
FNCE 750 (001 and 002) Andrew Metrick

PARTNERSHIP AGREEMENTS

To be handed in with Memo #1

Each student in the class must join one (and only one) partnership. Partnerships must have either two or three members. Partnerships may combine students from both sections of FNCE 750. *There will be no exceptions to these rules, and partnerships will not be allowed to be broken during the semester.* Please hand in one agreement per partnership along with your Case Memo #1. If you cannot find at least two members for your partnership, then you should fill in the name(s) of your incomplete partnership and still hand in the form along with Case Memo #1. Students who are not members of complete partnerships must stay after class on 9/21 and we will complete the partnerships. It is possible that some two-person partnerships would have to accept a third member from this group. Also, if a student drops the class (or fails to get in), then his or her partnership may have to another member.

Section (Circle one or both)

FNCE 750-001 [TR 10:30] FNCE 750-002 [TR 1:30]

	Name (Print)	Signature
Partner #1		
Partner #2		
Partner #3		