FINA 521: Investment Analysis, MSc Fall 2007 L3 and L4

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Class time and location: Saturdays.
L3: 9.00 a.m. – 12.20 p.m. in room 3008.
L4: 2.30 p.m. – 5.50 p.m. in room 3008.

Course website: webct.ust.hk
Please allow one to two working days from the date of your course registration for you to be cleared to access the website. If you still cannot access it at that point, email webct@ust.hk, stating that you are a FINA 521 L3/4 student.

Course description: This course is designed to introduce students to the theory and practice of portfolio management and financial asset pricing, with an emphasis on equities. We will discuss how to construct efficient portfolios, the Capital Asset Pricing Model ("CAPM") and its critics, multifactor asset pricing models, stock valuation with the CAPM and derivatives such as options. The course will consist of lectures, cases, problem sets and class discussions.

This course deals with the following questions:

- What information can we learn from security prices?
- What is an asset's risk, properly understood?
- What should be the relationship between this risk and expected return?
- Is this relationship a good description of what we observe or is it routinely wrong?
- If it is (or isn't) wrong, how should an investor behave?

What we won't cover: With only 7 classes there will be some important topics that will not be covered. These include: fixed income (bonds, yield curves etc); foreign exchange; forwards, futures and swaps; financial statement analysis and advanced topics in asset pricing such as the intertemporal CAPM and the equity premium puzzle.

Prerequisites: elementary economics and statistics.

Reading material: The principal textbook is *Investments*, 7th edition, by Bodie, Kane and Marcus, ("BKM"), published by McGraw-Hill. Supplemental readings will be available on the course website and handed out in class.

Assessment: There will be two problem sets and a final exam on 22nd December. The problem sets each account for 25% of the total course score and the exam for the remaining 50%.

Problem sets: work in groups of up to 6 people and submit one answer per group. You may form your own groups. If you are unable to form a group, let me know and I will help.

Final exam: This will be three hours long and open book. You will need a calculator. You may use any written resources you wish. You may not use a computer. It will not be possible for any student to take the exam after 22nd December, so if you cannot take the exam on the scheduled date, you will need to arrange to take it at some time in the previous 5 days.

Barclay's case: We will have a class discussion on a case study of Barclays Global Investors in the fourth class, prepared by Professor Luis Viceira of Harvard Business School. This discussion will not be graded. The case should be made available to you on the course website shortly.

Class discussions: We may use discussions in small groups as a learning aid, if I judge that this will not slow down the class too much.

Exam preparation: I will soon post the most recent past exam and its solution on the course website. I have also posted the solution manual for the problems in Bodie, Kane and Marcus, for both the 7th edition and the previous 6th edition on the course website. The numbering of the solutions for the 7th edition is wrong, so we have posted a document which enables you to match questions with answers. The problem sets will also be good revision and solutions will be provided (after you have submitted your answers).

Course objectives: The exam will test you on the course objectives. These are listed in this syllabus but may be updated. If I do update them, I will let you know in good time.

Feedback: I value your feedback and I'm not just saying that. In recent courses, students have helped me to improve the classes by providing useful and timely feedback on my teaching and classes, as well as making suggestions and asking me questions on the material.

Name plates: Please use one.

Preliminary course outline: L3/L4

Date	Topics	Reading	Discussions and exercises	
3rd November	• Course outline • Financial assets and capital markets • Concepts review • Rates of return	• BKM chapters 1-3, 5 and 6.1 and 6		
10th November	• Diversification • Efficient portfolios	• BKM chapters 6.2-6.6 and 7	• Problem set 1 handed out • Guidance on problem set	
17th November	• Index model • Multifactor asset pricing models • Regressions	• BKM chapters 8-10	• Guidance on Barclay's case	
24th November	• Stock valuation and the dividend discount model • Efficient markets hypothesis	• BKM chapters 11 and 18	• Barclays Global Investors case. • Problem set 2 handed out • Guidance on problem set 2	
1st December	• Efficient markets hypothesis cont'd • Behavioral finance • Evidence on security returns	• BKM chapters 12-13	• Problem set 1 due	
8th December	• Derivatives • Options, option strategies and volatility	• BKM chapters 20-21		
15th December	• Financial product and performance evaluation • Evidence on hedge fund performance	• BKM chapter 24	• Problem set 2 due	
22nd December	• Final exam			

Objectives for lecture 1

1. Statistics: be able to calculate expected values, variances, standard deviations, covariances and correlations. Be able to differentiate true values from estimates and compare and contrast conditional and unconditional expectations, variances, covariances and correlations.
2. Economics: recall how optimality and equilibrium are different concepts; explain how risk aversion, risk premium and certainty equivalent are related.
3. Finance: be able to calculate returns, cumulative returns, compound and average returns. Justify and criticize volatility as a risk measure. Compare and contrast bonds, stocks and derivatives. Be able to represent preferences over investments and the investments themselves on standard deviation-expected return graphs. Recall definitions of arbitrage, leverage and short sales.

Objectives for lecture 2

1. Be able to calculate risks, expected returns and Sharpe ratios for portfolios of one risky and one riskless asset, and draw capital allocation lines, with and without leverage, short selling, and different costs for borrowers, lenders, long investors and short sellers.
2. Be able to calculate optimal weights, risks and expected returns for portfolios of two risky assets, sketch efficient frontiers and interpret graphs showing efficient frontiers under different constraints.
3. Explain how allowing investment in a riskless asset changes investment opportunities when there are multiple risky assets. Draw capital allocation lines under different assumptions about borrowing costs.
4. Discuss out-of-sample performance of mean-variance efficient portfolios and the reasons for such performance. Propose and analyse solutions.

Objectives for lecture 3

1. Explain what is meant by a factor model, a factor loading or beta and a risk premium. Interpret estimates of factor betas and risk premia and illustrate with examples.
2. Be able to calculate expected returns, idiosyncratic and systematic risks, alphas and R-squareds, given sufficient information and obtain such information (in qualitative form) from a graph.
3. Explain the restrictions imposed by the CAPM on the securities market line and interpret evidence from a graph or regression as consistent or inconsistent with the CAPM.
4. Propose coherent explanations for empirical failures of the CAPM or other factor models.
5. Explain how changes in risk, risk aversion, beta and the riskless rate change expected return.

Objectives for lecture 4

1. Explain what moves asset prices, and what causes asset prices to surprise.
2. Given sufficient information, calculate discounted cashflow valuations, interpret these and discuss assumptions under various scenarios as to cashflow growth and expected return.
3. Discuss determinants of expected return and cashflow growth.

Objectives for lecture 5

1. Apply three forms of EMH, together with CAPM, to a series of asset-pricing anomalies.

2. Decide if a trading strategy is economically and/or statistically significantly outperforming CAPM-EMH benchmark.

3. Decide if a variable forecasts stock market return with economic and/or statistical significance.

4. Compare and contrast risk-based and behavioral explanations of cross-sectional anomalies and predictability.

5. Discover money-making opportunities!

Objectives for lecture 6

1. Evaluate parity values for puts and calls. Draw payoff/profit diagrams for options and combinations of options and other securities. Apply put-call parity.
2. Explain how changing circumstances affect option values.
3. Identify replicating portfolios in simple two-state examples.
4. Apply Black-Scholes option pricing formula in Excel to price options and derive implied volatility.
5. Compare and contrast implied volatilities from different options, dates. Construct explanations for any differences observed.
6. Spot the hidden option! (Also next class.)

Objectives for lecture 7

1. Be able to calculate, compare and explain differences between geometric, time-weighted and arithmetic average returns.
2. Identify risk adjustment measure for portfolio performance appropriate to investment objective.
3. Recommend replicating strategies for fund portfolios. Explain and interpret results from style and factor analysis regressions.
4. Avoid paying large fees for nothing!