

FALL 2005
FINA 521: INVESTMENT ANALYSIS

Instructor:	Professor Kalok Chan Email: kachan@ust.hk
Teaching Assistant	Ms. Teresa Zheng Email: fnzxx@ust.hk
Meeting Time:	Weekday Evening: Tuesday (Nov 1- Dec 20) 7:00 – 10:20 pm (No class on Dec 13) Saturday Afternoon: Saturday (Nov 5 – Dec 17) 2:30 – 5:50pm Venue: Room 2407
Common Exam:	Dec 24: 2:00 – 4:00pm Venue: To be announced
Course webpage:	WebCT (http://webct.ust.hk)

1. COURSE DESCRIPTION

This is an investment course where we will build an analytic framework for evaluating risk-return tradeoff. We will discuss investment theories such as portfolio optimization, capital asset pricing model (CAPM) and arbitrage pricing theory (APT). We will also show how to use Excel optimization software to build the optimal investment portfolios. The materials are borrowed from statistics, regression, and optimization, and students with knowledge in these areas will have an advantage. The course will also provide an introduction to stock and bond valuation, providing a basic framework for further study in advanced courses.

2. READING MATERIALS

(a) Textbook/Reference book: Reilly and K. Brown, *Investment Analysis and Portfolio Management*, Seventh Edition, South-Western Publishing, 2003.

This text that is widely regarded as a standard reference by practitioners in the investments industry. It offers good coverage of most topics without requiring a strong mathematical background. Many of the end-of-chapter problems are from CFA exams given in prior years.

(b) Lecture notes, which are posted as PDF files on the course web site. These should be downloaded prior to class.

(c) Selected articles posted on the web. These articles are strictly optional, although some of them will be discussed in the lecture. Even though they are not required, I strongly recommend that you read them if you are potentially interested in getting into the portfolio management

3. WORKLOAD

(a) Quiz and Exam

- There are three quizzes, but only two best quiz marks will be used to compute your final grade. Each quiz is of multiple-choice format and for about 20 minutes. The questions are on simple calculations and concepts. To prepare for the quiz, what you need is to review the lecture notes and practice some end-of-chapter questions. Answers to the questions will be posted on the WebCT. All quizzes will be held at the beginning of the class and therefore it is very important for you to come to the class on time.
- The common exam will be on December 24. Besides multiple-choice questions, there will also be short questions.
- All quizzes and exam are closed-book. However, you are allowed to bring a A-4 size cheat sheet where you are allowed to write down any formulae or any information you think useful. Please note that the cheat sheet should be handwritten, as the whole idea is for you to put down important notes while going through lecture materials and the textbook. You are not allowed to print out materials and paste directly into the cheat sheet.
- Absence from the exam will not be excused except for the serious medical reason (with doctor's letter provided). There will be no makeup quiz. You should make effort in taking at least two quizzes.

(b) Computer Homework Assignment

- There is a computer homework assignment that is done on a group basis. The assignment helps you to use the financial data and perform calculations and optimization using the Excel. Each group has to turn in a copy of the typed write-up at the beginning of the class of the due date. Late submission will receive a heavy penalty.

(c) Stock Portfolio Project

- A stock portfolio project will be conducted on a group basis. Details are discussed in the later part of the syllabus.

(d) Attendance Requirement and Class Participation

- I will distribute the attendance sign-up form during the class, starting the 2nd week. You should attend at least 70% of the classes (cannot miss more than 2 classes). To minimize the disruption to other students, you are expected to come on time (no more than 15 minutes late). Furthermore, you are expected to participate and contribute to the discussion in the class. Class attendance and participation will also affect your grade marginally.
- While I do not strictly disallow, I hope you try to attend the session that you register for. Given the classroom space constraint especially for the weekday evening, I might take action to prevent students from attending other session if it becomes very crowded for one class.

(e) Group Work

- Both the computer homework assignment and portfolio project is to done in groups with three to five members. How you run your group is not my concern. It is up to you to decide on the composition of the group and to make sure that each group member does his or her fair share of the work. I will not get involved in intra-group disputes. At the end of the course, I will ask each student to rate the contribution of each group member.

4. Final Grade

The final grade will be computed based on the following scores:

Quiz (10 points @)	20 points
Exam	30 points
Computer homework assignment	10 points
Stock portfolio project	30 points
Class attendance/participation	5 points
Peer Evaluation	<u>5 points</u>
Total	<u>100 points</u>

Plus bonus points from stock portfolio project (maximum: 3 points)

CLASS SCHEDULES

Date	Topics	Readings	Quiz or Homework Due
Topic 1	Introduction & Return/ Risk Measurement	Reilly & Brown (Ch. 1- 3) "The long-run perspective" "Global Stock Markets in the Twentieth Century."	
Topic 2	Portfolio Return and Risk	Reilly & Brown (Ch. 7-8) "Portfolio optimization in practice" "Twenty years of international equity investing" "Investing in Global Hard Assets: A Diversification Tool for Portfolios."	1st QUIZ (based on topic 1)
Topic 3	Capital Asset Pricing Model (CAPM)	Reilly & Brown (Ch.7-8) "The benchmark error problem with global capital market" Case Study: "Beta Management Company" (For Discussion)	1st report for stock portfolio project
Topic 4	Arbitrage Pricing Theory (APT)	Reilly & Brown (Ch. 9) "A practitioner guide to arbitrage pricing theory" "U.S. Equity Risk Attribute Model (RAM)." "The Three Types of Factor Models: A Comparison of Their Explanatory Power."	2nd QUIZ (based on topic 2 & 3)
Topic 5	Stock Valuation	Reilly & Brown (Ch. 11-13)	Computer homework assignment due
Topic 6	Bond Valuation (I)	Reilly & Brown (Ch.18-19)	3rd QUIZ (based on topic 4 & 5)
Topic 7	Bond Valuation (II)	Reilly & Brown (Ch.18-19)	Project Discussion
Dec 24	EXAM		
Dec 31	2nd report for stock portfolio project		

STOCK PORTFOLIO PROJECT CREATING AND ANALYZING A PORTFOLIO OF EQUITIES

Introduction

The objective of this project is to give you an opportunity of constructing a portfolio while controlling the risk. It will be done a group basis. Each group needs to manage a \$10 million portfolio. Two reports are required - the first due by November 19, 2005 and the second due by December 31, 2005.

Investment Objectives

In this project, you are asked to help manage a \$10 million portfolio for a private client. The client is conservative and he requests you to select from among the 33 constituent stocks of Hang Heng Index (HSI). The following are the constraints imposed by the clients:

Number of stocks:	No more than 15 stocks
Risk:	Volatility (std. dev) of the portfolio: $\leq 130\%$ of HSI
Beta of the portfolio:	0.7 – 1.3
Short Sale:	Prohibited

Instructions

1. We assume that you will fully invest \$10 million into the selected stocks. For simplicity, we assume that you could purchase fractional shares of stocks, and therefore you only need to specify your portfolio weighting for your portfolio, rather than the dollar amount invested into each stock.
2. You could download from the WebCT a spreadsheet containing the monthly price information of HSI and all 33 stocks. This allows you to compute risk measures such as beta, variance, and standard deviation which will be important inputs to your portfolio construction.
3. You need to identify the stocks included in the portfolio. You could select the stocks based on either company fundamentals or short-term technical factors. While the stock selection is mostly subjective, you should be mindful of the constraints imposed by the clients as you will be judged also based on the ability to comply with the investment objectives.
4. We assume that you will buy the selected stocks based on the closing prices as of November 18, 2005, and that the portfolio will be held for four weeks until December 16. At the end of the holding period, we will provide you with daily closing prices during the 4-week period so that you could evaluate your portfolio. You are welcome to obtain the price information yourself from other sources, but if there are discrepancies between your and our data, please adopt our data as the official one.
5. Based on the daily price information provided by us, you could compute the total return to the portfolio, as well as the ex-post standard deviation and beta of the portfolio for the 4-week period. You could then evaluate whether the performance of your portfolio satisfy the investment objectives.
6. There are two reports you need to come up. The first report is due by November 19, 2005. You should submit the hardcopy to me in the classroom Rm 2407 between 2:00-2:30pm. In the report, you need to provide a list of stocks that you have chosen. While it is not necessary to provide a justification for all selected stocks, it will be useful if you provide brief explanations for those with larger portfolio weightings. Furthermore, the report should provide some quantitative analysis regarding the risk (both total and

systematic) of the portfolio, as you would like to convince the client that you have done a careful job in the risk control.

7. The second report is due by December 31. While I still prefer you to submit a hardcopy, but if you find it inconvenient (since you don't have any class after December 24), you could email the softcopy to Teresa Zhang (fnzxx@ust.hk). In the second report, you should compute the return of the portfolio and compare with HSI. You need to compute the beta and standard deviation of the portfolio and to see whether you have successfully controlled the risk in accordance with the requirements. You might want to add some qualitative discussion of how some events during the period affect the return performance or risk characteristics of the portfolio. Finally, you could give some opinion on whether you recommend to revise the portfolio composition.
8. We will spend about 45 minutes in discussing the project in the seventh week. To increase student participation, I will invite 3 groups to give a 10-minute presentation of their portfolio and the underlying philosophy behind it. These groups will be randomly picked one week in advance so that they could prepare for the presentation.
9. Each report should be typed and not be more than 5 pages long. In addition, it could include an appendix presenting the data and detailed calculations. The report should be clear and professional. Each report will be judged based on the presentation (30%), clarity (30%), and the methodology (40%).
10. The team with exceptional performance (in terms of both return performance and risk control) will be given 3 bonus points towards the final grade.