## INVESTMENTS (MFE), SPRING 2012 ANDERS B. TROLLE

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*Content*: The course covers a wide range of topics in investments, including portfolio selection, equilibrium asset pricing, arbitrage pricing, market efficiency, behavioral finance, tests of asset pricing models, trading strategies in equity, fixed income, foreign exchange, and commodity markets, and strategic asset allocation. The course is rigorous, and students are expected to be able to understand and apply quantitative methods. Examples will illustrate important real-world applications of the theory.

*What is not part of the course*: The detailed analysis of individual companies and their balance sheets, financial statement analysis, stock picking, the impact of taxes on investments, and regulatory issues are outside the scope of the course.

*Prerequisites:* Students must have taken Quantitative Methods in Finance, Introduction to Finance, and Econometrics

*Course material:* The main textbook for the course is <u>Investments</u> by Zvi Bodie, Alex Kane, and Alan Marcus, 9th edition, 2010. This book is very thorough on the classical topics and a valuable reference about the workings of financial markets and the details of its institutions. However, this book is less quantitative and analytical than the level of this course. Therefore, my slides will be more technical than the book.

Another, slightly more quantitative, textbook, which covers much of the same material, is <u>Modern</u> <u>Portfolio Theory and Investment Analysis</u> by Edwin J. Elton, Martin J. Gruber, Stephen J. Brown, and William N. Goetzmann, 8th edition, 2009.

A good reference for the last two lectures on strategic asset allocation is a book of the same name: <u>Strategic Asset Allocation</u> by John Y. Campbell and Luis M. Viceira, 1st edition, 2002

I will also use a number of cases and journal articles, which will be posted on the course website.

*Class participation and seating arrangements*: Class participation and discussion are essential to learning. Participation in the class will not be explicitly graded, but we will keep track of who participates and who doesn't, and this information will be used in determining grades in the borderline cases. To help us keep track of who you are, I would like you to sit in the same seat each class. Please choose your preferred seat during the second class session.

*Assignments:* After each lecture, I will assign either a problem set or a case study. These are mandatory and must be done individually. The case studies will be discussed at the following lecture. All problem sets and case studies are graded. Problem sets or case studies turned in late will not be graded (i.e., result in a zero grade).

*Exams:* There will also be a mid-term exam and a final exam, which are closed-book, closed-notes. However, you are permitted to bring a calculator. The mid-term exam will cover all material taught until the date of the exam. The final exam is cumulative – it covers the material of the whole course, although it emphasizes the second half of the course.

*Grading:* In calculating the grade for the course, the problem sets and case studies will receive a combined weight of 30%, the mid-term exam a weight of 30%, and the final exam a weight of 40%.

*Course website:* <u>http://moodle.epfl.ch/course/view.php?id=9371</u>. Enrolment key will be provided at the first lecture.

Preliminary course outline:

Lecture 1: Introduction Asset classes and financial instruments, mutual funds, hedge funds, risk and return measures, the historical performance of asset classes

BKM chapter 1-5

Lecture 2: Portfolio theory Utility functions, risk-aversion, choosing between risky assets, mean-variance efficient frontier, diversification benefits

BKM chapter 6, 7

## Lecture 3: Equilibrium asset pricing

The Capital Asset Pricing Model (CAPM), extensions (zero-beta CAPM, labor income and non-traded assets, consumption, liquidity, intertemporal CAPM), applications in portfolio optimization (the Black-Litterman model)

BKM chapter 8, 9, 27

Lecture 4: Tests of asset pricing models The Roll critique, testing the CAPM, the Fama-French model, momentum and liquidity factors, the consumption-CAPM and the equity premium puzzle

Case Martingale asset management

BKM chapter 13

Lecture 5: Arbitrage pricing theory

BKM chapter 10

Lecture 6: The efficient market hypothesis

BKM chapter 11

Mid-term exam in class

Lecture 7: Behavioral finance and limits to arbitrage Behavioral biases, deviations from the law of one price, the "siamese twin", equity carve-out, and closed-end fund puzzles.

Case: Strategic Capital Management, LLC

BKM chapter 12

Lecture 8: Fixed income Bonds and interest rates, bootstrapping, cubic splines, Nelson-Siegel, duration, convexity

Readings: BKM chapter 14-16

Lecture 9: Fixed Income (cont.) Monetary policy, the expectation hypothesis, bond return predictability

Case: Deutsche Bank. Finding Relative Value Trades

Lecture 10: Commodity and FX Forward and futures markets, commodity investments, foreign exchange investments

Case: The Harvard Management Company and Inflation-Protected Bonds

BKM chapters 22, 23

Lectures 11 and 12: Strategic asset allocation Stochastic investment opportunities, stochastic interest rates, stochastic risk premia

Final exam in class