London School of Economics **FM423 - FT - 2008-9**
Department of Finance **Vayanos - Yuan - Zachariadis**

Course Syllabus

Course Description

This is the core investments course in the MSc Finance Full-Time Programme. It aims to familiarize students with the workings of asset markets and the fundamental tools of asset valuation. Three important asset classes will be covered: bonds (25%), stocks (50%), and derivatives (25%).

The starting point of asset valuation is the present-value formula, and will be covered first. We will then proceed to fixed-income securities, focusing mainly on government bonds and emphasizing the relation between valuation and no-arbitrage. Next, we will move to stocks, starting with basic notions of risk, return and diversification. We will formalize the trade-off between risk and return in the context of portfolio theory. We will then examine how risk is priced in equilibrium, via the capital asset pricing model (CAPM) and multi-factor models. In covering the models, we will also examine their implications for stock valuation, security selection, and performance evaluation. We will also ask whether the market values stocks efficiently, or whether there are "abnormal" returns leading to large profits. Finally, we will cover derivatives, especially futures and options. After an overview of the derivatives' main uses, we will cover valuation methods, such as the binomial and the Black-Scholes model, emphasizing again the relation between valuation and no-arbitrage.

While the main goal of the course is to familiarize students with the fundamental theoretical concepts, we will also emphasize the concepts' practical applications. This will be done through a number of case studies, homework problems and computer assignments.

Course Material

The lectures are based on our typed-up notes. These are included in your study packs and are also available on the course website. You should bring the notes with you in the lectures - this will reduce the need to take your own notes, and give you more time to understand the concepts. After the lectures, you should go over the notes again, and do the homeworks.

The lecture notes are supplemented by the following textbooks:

- Bodie, Kane and Marcus, *Investments*, 7th Edition, McGraw Hill.
- Berk and DeMarzo, *Corporate Finance*, Pearson International Edition.

The readings from these textbooks are recommended but not required. The readings provide alternative perspectives and explanations to the lecture notes, which can aid significantly your understanding. One additional advantage of the textbooks is that they can constitute good background references for future courses.

Lectures

Lectures are on Tuesdays and Thursdays, times TBA in room TBA. They last for three hours, with a 15-minute break in the middle. Please make every effort to attend the lectures and come well-prepared.

Assessment

The course will be assessed through homework and a final exam. The final exam will receive weight 80% for the course grade and the homework 20%. Out of the homework assignments that will be distributed, four will be assessed and count towards the 20% weight.

Course Outline

BKM denotes Bodie, Kane and Marcus and BD denotes Berk and DeMarzo.

Lecture 1

Present Values

Time value of money, present value, future value, compounding, perpetuities, annuities

Read: BD Chapters 3-5 (Chapter 3 is not essential for Lecture 1, but is good preparation for Lectures 2 and 10)

Lectures 2-3

Valuation of Fixed-Income Securities I

Types of bonds, price and yield to maturity, term structure of interest rates, spot and forward rates, bond returns

Read: BKM Chapters 14, 15; BD Chapter 8 (8.1,8.3,8.4)

Lecture 4

Valuation of Fixed-Income Securities II

Bond prices and interest rate movements, duration, fixed-income portfolio management

Read: BKM Chapter 16; BD Chapters 8 (8.2), 30 (30.4)

Case 1: Equitable Life

Lecture 5

Statistical Facts on Stock Returns

Stocks vs. bonds, individual stocks vs. stock indices, stocks in different industries, predictability of returns

Read: BKM Chapter 5; BD Chapter 10 (10.1-10.8)

Lectures 6-7

Portfolio Theory

Mean and variance of a portfolio, diversification

Read: BKM Chapters 6, 7, 8; BD Chapter 11

Case 2: The Harvard Management Company and Inflation-Protected Bonds

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Lectures 8-9

The Capital Asset Pricing Model (CAPM)

Derivation and meaning of the CAPM, beta, CML and SML, uses of the CAPM

Read: BKM Chapter 9; BD Chapters 12, 13

Lecture 10

Valuation of Stocks

Dividend growth model, price-earnings ratios

Read: BKM Chapters 18, 19; BD Chapter 9

Lecture 11

Multi-factor Models

Arbitrage pricing theory (APT), three-factor model

Read: BKM Chapter 10; BD Chapter 13

Lectures 12-13

Market Efficiency and Anomalies

Notions of market efficiency, statistical evidence on market efficiency, implications of market efficiency, market anomalies, behavioral finance

Read: BKM Chapters 11, 12; BD Chapter 10 (10.9)

Lecture 14

Active Portfolio Management

Market timing, security selection

Read: BKM Chapters 26, 27

Case 3: GMO: The Value Versus Growth Dilemma

Lecture 15

Performance Evaluation

Measures for evaluating performance, mutual funds, hedge funds

Read: BKM Chapter 24

Case 4: The Dynamis Fund: An Energy Hedge Fund

Lectures 16-17 **Derivatives I: Forwards and Futures**

Examples of derivatives, trading strategies involving derivatives, uses of derivatives, prices of forwards and futures

Read: BKM Chapters 22, 23; BD Chapter 30 (30.1-30.3)

Lectures 18-20 **Derivatives II: Options**

Put-call parity, binomial option pricing model, applications of option pricing theory, introduction to the Black-Scholes pricing model

Read: BKM Chapters 20, 21; BD Chapters 20, 21

Case 5: The Walt Disney Company's Yen Financing