

**Queen Mary, University of London**

**School of Economics and Finance**

**Quantitative Asset Pricing ECOM043, MSc (Fin. & Econ.)**

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## **READING LIST & LECTURE SCHEDULE**

### **Aim (Broad Educational Purpose)**

In this course we aim to analyse the equity market, i.e. the valuation of common stocks, and the bond market, i.e. the primary market of corporate debt. In the latter subject we will show how the determination of interest rates by monetary authorities will be transmitted in the financial system. Fixed income portfolio management will be one of our major considerations, since fixed income or, loosely speaking, bond positions determine the “low risk” component of dynamic financial portfolios.

After examining the major characteristics of equity and debt securities, we will provide an examination of the cornerstone of modern finance, i.e. portfolio theory. It will emerge that the correlation between securities determines, to a large extent, the overall risk position of a portfolio. Furthermore, successful risk management of complex portfolios primarily depends on the “pulling of risks”, an issue which can only be studied within a portfolio context. The construction of optimal portfolios and the equilibrium valuation of individual risky securities will be our focus in the later part of the course.

### **Objectives (Specific Learning Outcomes)**

On successful completion, students should

- understand the valuation of equities
- be familiar with the term structure of interest rates
- have a thorough understanding of the concepts of duration and convexity of coupon bearing bonds and their implications for fixed income portfolio immunization
- be familiar with hedging techniques and butterfly trades in the Treasury bond market
- be able to use the mean variance framework in portfolio analysis
- be able to understand the underlying concepts of CAPM and APT.

### **Teaching Arrangements**

Semester A, weekly 3 hour sessions. Students will be given a detailed set of lecture notes, problem sets, and solutions to problem sets. The lecture notes draw heavily on the recommended books below.

## **Course Assessment**

Before the end of the semester students will sit a test that counts 20% towards the course unit mark. In May, there is a formal  $2\frac{1}{2}$  hours examination that counts for 80% of the course unit mark.

## **Recommended Reading**

Brealey R.A. & S.C. Myers (2003), *Principles of Corporate Finance*, McGraw-Hill.

Kenneth D. Garbade (1996), *Fixed Income Analytics*, MIT Press.

Elton E.J. & M.J. Gruber (2003), *Modern Portfolio Theory and Investment Analysis*, Wiley.

## **Related Reading**

Tett G. (2009), *Fool's Gold*, Little, Brown.

Cooper G. (2008), *The Origin of Financial Crises*, Harriman House.

Stiglitz J.E (2003), *The Roaring Nineties*, Penguin Books.

Dunbar N. (2000), *Inventing Money*, Wiley.

Malkiel B.G. (1990), *A Random Walk Down Wall Street*, W.W. Norton.

## **Lecture Schedule:**

### Weeks 2-3

**1.** Present Value and the Cost of Capital; the Value of Common Stocks.

[Ref.: Brealey & Myers ch. 1-4]

### Weeks 4-6, 8-9

**2.** The Term Structure of Interest Rates.

[Ref.: Lecture Notes I; Brealey & Myers ch. 23; Garbade ch. 1-2]

**3.** Duration of Bonds.

[Ref.: Lecture Notes II; Garbade ch. 3-4]

**4.** Bond Convexity and Immunization.

[Ref.: Lecture Notes III; Garbade ch. 6]

**5.** Hedging in the Treasury Bond Market.

[Ref.: Lecture Notes IV; Garbade ch. 12]

**6.** Butterfly Trades.

[Ref.: Lecture Notes V; Garbade ch. 14]

### Weeks 10-12

**7.** Portfolio Analysis.

[Ref.: Lecture Notes VI and VII; Elton & Grubber ch. 4-7; Brealey & Myers ch. 7-8]

**8.** Capital Asset Pricing Model (CAPM).

[ Ref.: Lecture Notes VIII; Elton & Grubber ch. 13-14]

**9.** Arbitrage Pricing Theory (APT).

[ Ref.: Lecture Notes VIII; Elton & Grubber ch. 16 ]