

CENTRE FOR ECONOMIC AND FINANCIAL STUDIES

University of Glasgow

PORTFOLIO ANALYSIS AND INVESTMENT

2009-2010

SEMESTER ONE

COURSE COORDINATOR AND LECTURER: Dr Alexandros Kostakis

TIMETABLE:

Lectures: Wednesday 11.00 am-1.00 pm

Tutorials: Monday 1.00-2.00 pm

Total number of teaching hours: 20 hours lectures, 5 hours tutorials

Course credits: 20

Course code: MJHS

Course aims and overview

The aim of this course is to provide students with a thorough understanding of portfolio choice in financial markets combining theoretical foundations with empirical evidence. The first part of the course analyses how individuals make investment decisions under certainty and uncertainty, and the role of financial markets. In the second part we examine mean-variance portfolio theory, and building upon it we derive the Capital Asset Pricing Model (CAPM) and discuss its extensions. We also analyse the framework that has been employed to test the CAPM and summarize the empirical findings. The last part examines how asset pricing models can be used to evaluate investment performance and how this is related to the efficient market hypothesis (EMH).

Intended learning outcomes

By the end of the course, students should be able to:

- Analyze investment decisions under certainty
- Compute risk and return measures for a single asset and a portfolio of assets
- Find the mean-variance efficient set and illustrate the benefits from portfolio diversification
- Derive the theoretical version of the CAPM, explain the empirical tests and summarize the empirical evidence
- Analyze the basic concepts underlying bond portfolio management
- Use multi-factor asset pricing models to evaluate investment performance

Assessment

Students are assessed on the basis of an in-course examination (25%) and a final written examination (75%). The in-course examination is a one-hour written paper. The final examination takes the form of a two-hour written paper, with students being required to answer two questions from a choice of four.

Lecture outline

Lecture 1: The aim of this lecture is to explain how firms' managers make investment decisions with the objective of maximising shareholders' wealth assuming that future cash flows are known with certainty. By the end of it students should be able to:

1. Distinguish between economic profit and accounting profit.
2. Explain and utilise four commonly employed capital budgeting techniques: payback period, accounting rate of return, net present value, and internal rate of return.

Main reading:

1. Chapter 2, Copeland, Weston, Shastri (2004). *Financial Theory and Corporate Policy*, 4th edition, New York: Addison-Wesley.

Lecture 2: The aim of this lecture is to explain how investors make choices when faced with uncertainty with the ultimate goal of maximising the expected utility of future wealth. By the end of it students should be able to:

- Explain the five axioms of cardinal utility.
- Define risk aversion using the second-derivative test and the Markowitz approach.
- Measure, explain and contrast the Markowitz and the Pratt-Arrow risk-premium.
- Explain first order and second order stochastic dominance.

Main reading:

1. Chapter 3, Copeland, Weston, Shastri (2004). *Financial Theory and Corporate Policy*, 4th edition, New York: Addison-Wesley.
2. Chapters 4& 5, Bodie, Kane and Marcus, (2009). *Investments*, 8th edition, McGraw- Hill.

Lecture 3: The aim of this lecture is to introduce some fundamental concepts of portfolio theory. By the end of it students should be able to:

- Define measures of return for a single asset and for a portfolio of assets.
- Define measures of risk for a single asset and for a portfolio of assets
- Define the minimum variance opportunity set.

Main reading:

1. Chapters 4& 5, Elton, Gruber, Brown and Goetzmann (2007). *Modern Portfolio Theory and Investment Analysis*, 7th edition Wiley.
2. Chapter 9, Cuthbertson and Nitzsche (2008). *Investments*, 2nd edition, Wiley.

Lectures 4-5: The aim of these lectures is to show how investors choose optimal portfolios, first in a world without riskless borrowing and lending, then with such opportunities. By the end of it students should be able to:

- Explain how the efficient set can be constructed with: two risky assets, one risky and risk-free asset, and many assets.
- Show how the Capital Market Line can be derived and present the two-fund separation principle.
- Analyse the benefits from portfolio diversification.

Main reading:

1. Chapter 7, Bodie, Kane and Marcus, (2009). *Investments*, 8th edition, McGraw- Hill.
2. Chapter 10, Cuthbertson and Nitzsche (2008). *Investments*, 2nd edition, Wiley.
3. Lecture notes provided by the lecturer.

Lecture 6: The aim of this lecture is to analyse the Capital Asset Pricing Model (CAPM). By the end of it students should be able to:

- Explain the assumptions underlying the derivation of the CAPM.
- Derive the CAPM and analyse its properties.
- Evaluate the applications of the CAPM for corporate policy.

Main reading:

1. Chapter 6, Copeland, Weston, Shastri (2004). *Financial Theory and Corporate Policy*, 4th edition, New York: Addison-Wesley.
2. Chapter 9, Bodie, Kane and Marcus, (2009). *Investments*, 8th edition, McGraw- Hill.
3. Chapter 13, Elton, Gruber, Brown and Goetzmann (2007). *Modern Portfolio Theory and Investment Analysis*, 7th edition Wiley.

Lecture 7: The aim of this lecture is to introduce extensions of CAPM. By the end of it students should be able to:

- Explain how the CAPM changes if investors cannot borrow and lend at the risk-free rate.
- Evaluate the implications for the CAPM from the existence of non-normally distributed returns, non-marketable assets, and heterogeneous expectations and taxes.
- Describe how the CAPM behaves in continuous time.
- Explain the Arbitrage Pricing Theory (APT) and the Consumption CAPM.

Main reading:

1. Chapter 6, Copeland, Weston, Shastri (2004). *Financial Theory and Corporate Policy*, 4th edition, New York: Addison-Wesley.
2. Chapter 14, Elton, Gruber, Brown and Goetzmann (2007). *Modern Portfolio Theory and Investment Analysis*, 7th edition Wiley.
3. Chapter 10, Bodie, Kane and Marcus, (2009). *Investments*, 8th edition, McGraw- Hill.

Lecture 8: The aim of this lecture is to present empirical tests of the CAPM and discuss multi-factor asset pricing models. By the end of it students should be able to:

- Analyse the various frameworks that have been employed to test the CAPM, and summarize the empirical findings.
- Analyse the Fama and French three factor model of expected returns.
- Discuss the implications of the various 'anomalies' for stock market efficiency.

Main reading:

1. Chapter 15, Elton, Gruber, Brown and Goetzmann (2007). *Modern Portfolio Theory and Investment Analysis*, 7th edition Wiley.
2. Chapter 13, Bodie, Kane and Marcus, (2009). *Investments*, 8th edition, McGraw-Hill.

Lecture 9: The aim of this lecture is to analyze the fundamental principles of bond portfolio management. By the end of it students should be able to:

- Analyse the various theories of the term structure of interest rates
- Define the concepts of duration and interest rate sensitivity
- Explain how a bond portfolio can be immunized against interest rate changes

Main reading:

1. Chapters 14-16, Bodie, Kane and Marcus, (2009). *Investments*, 8th edition, McGraw- Hill.
2. Chapter 22, Elton, Gruber, Brown and Goetzmann (2007). *Modern Portfolio Theory and Investment Analysis*, 7th edition Wiley.

Lecture 10: The aim of this lecture is to outline how to evaluate investment performance using asset pricing models and other measures. By the end of it students should be able to:

- Calculate various measures for investment performance
- Explain the advantages and disadvantages for each of the performance measures
- Analyze the evidence on mutual funds performance with respect to the Efficient Markets Hypothesis (EMH)

Main reading:

1. Chapter 29, Cuthbertson and Nitzsche (2008). *Investments*, 2nd edition, Wiley.
2. Chapter 24, Bodie, Kane and Marcus, (2009). *Investments*, 8th edition, McGraw-Hill.

Course main texts

1. Copeland, T., Weston, F., and K. Shastri (2004). *Financial Theory and Corporate Policy*, 4th edition, New York: Addison-Wesley.
2. Bodie, Z., Kane, A. and A.J. Marcus (2009). *Investments*, 8th edition, McGraw-Hill.
3. Cuthbertson, K. and Nitzsche, D. (2008). *Investments*, 2nd edition, Wiley.
4. Elton, Gruber, Brown and Goetzmann, (2007). *Modern Portfolio Theory and Investment Analysis*, 7th edition, Wiley.