

12F003

Asset Pricing

6 ECTS

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## Introduction

This course is an introduction to the foundations of Asset Pricing. It starts with the analysis of financial decision making under uncertainty. It then deals with equilibrium theories of the pricing of risky financial instruments as well as an overview of empirical tests of the theory and new theories that have emerged as a response to the failure of equilibrium asset pricing models. The course ends with asset pricing under no arbitrage.

## Objectives

To learn the characteristics of some financial securities and their trading rules.  
To understand the reasons behind the compensation for risk associated with investment decisions.  
To learn the theoretical foundations of the most important asset pricing models.  
To be able to apply these models to real data in a practical context.

## Required Background Knowledge

Students are expected to have a minimum preparation in mathematics, statistics, econometrics and programming. More specific requirements include: function differentiation; constrained optimization; linear algebra; statistical inference; and multivariate regression analysis. Previous knowledge of Finance is not assumed

## Learning Outcomes

After this course students are expected to know how to determine the value of risky investments, how to construct efficient portfolios, and how to identify and exploit arbitrage opportunities.

## Methodology

During class meetings we will work combining theory and practical application simultaneously. Therefore, students are required to bring their laptops with Microsoft Office (Excel) and Matlab installed.

## Evaluation

Grading:

- Exam: 60%
- Problem sets: 40%

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The exam will contain both exercises and theoretical questions. Questions may be related to any material that is part of the program. Problem sets consisting of both standard exercises and empirical analysis of real data will be handed out to students during the course. Students must work in groups of 3 people, but they must be ready to defend their answers individually in class.

### Course contents

#### Chapter One. HISTORICAL AND INSTITUTIONAL BACKGROUND

#### Chapter Two. DECISION MAKING UNDER UNCERTAINTY

1. Expected Utility and Risk Aversion
2. Expected Utility and Optimal Portfolio Choice
3. Comparative Statics Results
4. Commonly used Utility Functions
5. Mean-Variance Analysis

#### Chapter Three. ASSET PRICING IN EQUILIBRIUM

1. Introduction
2. The expected return on a portfolio
3. Measurement of Risk and Diversification
4. Two-fund separation theorem and optimal portfolio when only risky assets are available
5. Asset pricing under mean-variance preferences: the Capital Asset Pricing Model (CAPM)
6. Applications of the CAPM

#### Chapter Four. EMPIRICAL ASSET PRICING

1. Asset Pricing Tests
2. Anomalies
3. Market Imperfections

#### Chapter Five. ARBITRAGE

1. The Law of One Price
2. Pricing of Forwards, Futures and Swaps
3. Option pricing
4. The Arbitrage Pricing Theory (APT)

**For all the sessions students will need the class notes, the data files and a laptop with Matlab.**

Session	Title, materials and cases
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1	Chapter one. Introduction
2	Chapter two. Decision making under uncertainty (1)
3	Chapter two. Decision making under uncertainty (2-4)
4	Chapter two. Decision making under uncertainty (5)
5	Chapter three. Asset pricing in equilibrium (1-2)
6	Chapter three. Asset pricing in equilibrium (3)
7	Chapter three. Asset pricing in equilibrium (4)
8	Chapter three. Asset pricing in equilibrium (5)
9	Chapter three. Asset pricing in equilibrium (6)
10	Chapter four. Empirical asset pricing (1)
11	Chapter four. Empirical asset pricing (1)
12	Chapter four. Empirical asset pricing (2)
13	Chapter four. Empirical asset pricing (3)
14	Chapter four. Empirical asset pricing (3)
15	Chapter five. Arbitrage (1)
16	Chapter five. Arbitrage (2)
17	Chapter five. Arbitrage (2)
18	Chapter five. Arbitrage (2)
19	Chapter five. Arbitrage (3)
20	Chapter five. Arbitrage (4)

## Bibliography

- Lecture notes
- Campbell, J, Lo, A. and A.C. Mackinley, *The Econometrics of Financial Markets*, Princeton University Press, 1997.
- Huang, C. and R. Litzenberger, *Foundations for Financial Economics*, North-Holland, New York, 1988.
- Hull, J., *Options, Futures and Other Derivatives*, Prentice Hall, 2000.
- Back, K., *Asset Pricing and Portfolio Choice Theory*, Oxford University Press, 2010.
- Pennacchi, G., *Theory of Asset Pricing*, Pearson-Addison Wesley, 2008.
- Marín, J. and G. Rubio, *Economía Financiera*, Antoni Bosch Editors, 2001, (in Spanish).

Popular undergraduate textbooks (for students who have not taken any finance course before):

- Brealey, R., S. Myers, and F. Allen. *Principles of Corporate Finance*, McGraw-Hill, 2005.
- Grinblatt, M. and S. Titman, *Financial Markets and Corporate Strategy*, McGraw-Hill, 2002.

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### Professor's Biography

Javier Gil-Bazo is Associate Professor of Finance at UPF and BGSE. His research interests cover empirical asset pricing and the economics of the asset pricing industry.

His research has been published in academic journals such as *Journal of Finance*, *Journal of Banking and Finance*, *Quantitative Finance*, *Journal of Business Finance and Accounting*, *Journal of Financial Econometrics*, *Journal of Economic Behavior and Organization*, and *Economics Letters*. His work has been awarded with the Best Paper Award at the European Conference of the Financial Management Association, the Honorable Mention of the Moskowitz Prize for outstanding research in socially responsible investing and the BME Best Derivatives Paper Award at the Annual Meeting of the Spanish Finance Association.

Javier has served as a referee for *Journal of Finance*, *Management Science*, *Review of Finance*, *Journal of Banking and Finance*, *Financial Management*, *Journal of Financial Services Research*, *Journal of Empirical Finance*, *European Journal of Finance*, *Journal of Business Finance and Accounting*, and *Quantitative Finance*. He is an Associate Editor of the *Spanish Review of Financial Economics* and has belonged to the programme committee of the Annual Meeting of the European Finance Association, the European Conference of the Financial Management Association, the Annual Meeting of the European Financial Management Association, and the Annual Meeting of the Spanish Finance Association.

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