1 Objective

This course aims to provide a comprehensive introduction to the pricing of financial assets. We will cover the main pillars of asset pricing, including choice theory, portfolio theory, equilibrium pricing, and arbitrage pricing. Some empirical evidence will also be discussed and we will get our hands dirty with real data. We will learn how to use Matlab (optional, but recommended) for empirical work.

At the end of the course, you will be able to read a significant range of current research papers in asset pricing and understand the main issues being discussed.

2 Course contents

For each of the subjects, we list the main topics that that the student should know well at the end of the course. "DD" e "C" refer to the books "Danthine and Donaldson" and "Cochrane"

1. Individual Choice Theory
   - Main topics:
     - Definition and measures of risk aversion
     - Important utility functions: quadratic, exponential, log, and power
   - Readings:
     - Handouts, ch 1 and 2
     - DD, ch 1, 2, 3, 4.
   - Homework
     - Exercises: Handouts, end of ch 2.

2. Portfolio Choice
   - Main topics:
     - Definition and solution of the canonical portfolio problem
- Analysis of the optimal portfolio choice.

- **Readings:**
  - Handouts, ch 3
  - DD, ch 5, 6

- **Homework**
  - Exercises: Handouts, end of ch 3.

3. **Portfolio choice for Mean-Variance investors**
   - **Main topics:**
     - Assumptions leading to mean-variance preferences
     - Computing the frontier with N risky assets
     - Computing the frontier with N risky and 1 riskless asset
   - **Readings:**
     - Handouts, ch 4
     - DD, ch 7
   - **Homework**
     - Exercises: Handouts, end of ch 4.
     - Case: Computing Mean-Variance frontiers with US stocks.
     - Optional assignment: Portfolio selection with short-selling restrictions.

4. **Capital Asset Pricing Model**
   - **Main topics:**
     - Capital Market Line
     - Security Market Line
     - Application of the CAPM to security valuation
     - Economic intuition for why stocks with higher covariance with the market (beta) have higher returns
   - **Readings:**
     - Handouts, ch 5
     - DD, ch 7
   - **Homework**
     - Exercises: Handouts, end of ch 5.
     - Case: Beta estimation for two US companies.

5. **Arbitrage Pricing Theory and Factor Models**
   - **Main topics:**
     - Factor structure of stock returns
     - Important example: Market model
     - Arbitrage arguments and the pricing equations
     - Fama and French 3 Factor Model
     - Application to Fund Performance
   - **Readings:**
     - Handouts, ch 6
6. Pricing in Complete Markets
   • Main topics:
     o The concept of Complete Markets
     o Arrow-Debreu Pricing
     o Risk-Neutral Pricing
   • Readings:
     o Handouts, ch 7
     o DD, ch 10, 11
   • Homework
     o Exercises: Handouts, end of ch 7.

7. Consumption-based Asset Pricing
   • Main topics:
     o Fundamental Asset Pricing Equation
     o Stochastic Discount Factor
     o Risk-Premiums
     o Consumption CAPM
   • Readings:
     o Handouts, ch 8
     o C, ch 1, 2, 3
   • Homework
     o Exercises: Handouts, end of ch 8.

3 Bibliography

3.1 Basic
   - Handouts.
3.2 Optional

*Financial Economics:*

*Undergraduate Finance:*

*Microeconomics:*

*Math and econometrics:*

4 Grading

The final grade is computed as follows:

- Final Exam: 40%
- Midterm Exam: 30%
- Cases, Homework, and Class Participation: 30%

The exams are closed-book and closed-notes. However, you may use a formula sheet (this will be discussed in more detail in the first class).