

**Graduate School of Economics and Management
Universities of Ca' Foscari Venezia, Padova and Verona**

FINANCE I

Lecturers: Silvia Centanni, Giacomo Scandolo

PART I: Preference theory and equilibrium models (Giacomo Scandolo, 15 hrs)

Part I will introduce some models for describing microeconomic preferences and will discuss some related equilibrium issues. In particular the following topics will be treated:

1. Markowitz mean-variance criterion. Efficient portfolios.
2. The Capital Asset Pricing Model (CAPM)
3. Von Neumann-Morgenstern expected utility framework.
4. Single period optimal portfolio selection.
5. Consumption CAPM
6. Multi-period portfolio selection (discrete time), dynamic programming.
7. Intertemporal CAPM
8. Kahnemann-Tversky prospect theory and CAPM.
9. Equilibrium with heterogeneous agents (not sure I'll cover this)

References:

- a. Jaksza Cvitanic and Fernando Zapatero, "Introduction to the Economics and Mathematics of Financial Markets", MIT Press (2004)
- b. John H. Cochrane, "Asset Pricing", Princeton University Press (2001)
- c. Some selected journal articles for additional reading
- d. Slides and notes by the teacher

PART II: Topics on derivative pricing in complete markets (Silvia Centanni, 15 hrs)

Part II will introduce some models for financial markets, and for describing no arbitrage evaluation and hedging of contingent claims. In particular the following topics will be treated:

1. Discrete binomial process and its properties
2. Basic financial market and no arbitrage hypothesis: the discrete, binomial case
3. Replicating portfolio and derivative evaluation with one period of time;
4. Replicating and self financing trading strategies with n periods of time;
5. Remarks on the role of the equivalent martingale measure
6. Brownian motion and geometric Brownian motion;
7. Continuous time market and no arbitrage hypothesis in the continuous case;
8. replicating and self financing trading strategies in continuous time;
9. Black and Scholes differential equation;
10. Hints on the Feynman-Kac Theorem and solution of the Black and Scholes equation using expected value
11. Some remark on the role of the equivalent martingale measure.

References:

- J. Hull: Options, Futures and Other Derivatives (fifth edition) Prentice Hall, New Jersey (2003)
- F. Black and M. Scholes: "The Pricing of Options and Corporate Liabilities", Journal of Political Economy, 1973.
- Cox, J; Ross, S; Rubinstein, M.: "Option Pricing: A simplified approach", Journal of Financial Economics, 1979.