

Theoretical Asset Pricing 2009 – Syllabus for the first part of  
the course  
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The first part of Theoretical Asset Pricing aims to prepare you for the second part of the course, and provide a recap of some of the themes that you may already be familiar with from your master's studies. Because this is an introduction to theoretical asset pricing, I strive not to use the same level of formality in my presentation of various topics as will be done in the second part of the course.

## 1 Prerequisites

I assume that you have a knowledge of asset pricing that corresponds to what is being taught at the M.Sc. level. Thus, you should have seen a utility function, know the intuition behind the CAPM and the APT, the assumptions behind these models etc. Furthermore, you should have a working knowledge of matrix algebra, of Lagrange optimization and of the properties of the expectation operator. If you feel unsure about your skills, please read through the supporting literature.

## 2 Lecture notes

Lecture notes will be posted on the course homepage. (The notes may contain some material that we might not have time to cover during the lectures.)

## 3 Exercises

There will be two exercise sessions for the first part of the course. The two sets of exercises will be posted on the course homepage. You can either hand in the answers at the beginning of the exercise session or return them to the office of GSF (by e-mail [gfsf@hse.fi](mailto:gfsf@hse.fi) or by mail) in advance. Please remember to take a photocopy of your answers when you return them, since they are not returned. Your answers will be graded and they constitute 10% of your final grade for the course.

**Note:** Some of the exercises this year will be new, and some will be exercises that have appeared on this course previously. Thus, it is possible, even likely, that you might be able to obtain solutions to these exercises that I have handed out earlier. However, I **strongly** recommend you not to look at these solutions when solving the exercises. In line with the GSF honor code, by handing in your answers, you declare that the solutions **are your own** and that they are **not based on solutions from previous years**. If I catch you cheating, I will give you 0 points from the exercises. Even more significantly, you will suffer a reputation loss within GSF (and academia in general) by presenting someone else's work as your own. Check out the definition of "*plagiarism*" and how it is viewed in academic circles if you do not immediately grasp what the consequences of cheating will be.

## 4 Outline for part 1 (still subject to minor changes)

1. A short introduction
2. Utility theory and risk aversion
3. Investment decisions

4. Mean-variance analysis, CAPM
5. Arrow-Debreu securities, state prices, market completeness
6. The stochastic discount factor (SDF) representation of asset pricing. Existence theorems for the SDF: law of one price, absence of arbitrage
7. The fundamental theorem of asset pricing and the pricing rule representation theorem
8. Consumption-based asset pricing and the equity premium puzzle
9. A primer on continuous-time stochastic processes and Itô's lemma.

## 5 Literature

Pennacchi, G., Theory of Asset Pricing, Pearson Education 2008, Chapters 1-4, 8

Danthine, J-P & Donaldson, J, Intermediate Financial Theory. 2nd ed. Elsevier Academic Press. 2005, Chapters 3-9

Hull, J.C., Options, Futures, and Other Derivatives, 5th ed., Prentice Hall 2003, Chapter 11

**Note:** Pennacchi (2008) and Danthine and Donaldson (2005) are roughly interchangeable with each other.

## 6 Supporting literature

Copeland, T.E., Weston J.F., Shastri, K., Financial Theory and Corporate Policy, 4th ed., Pearson/Addison Wesley 2005. Chapters 3-7, Appendices B (Matrix Algebra), D (Calculus and Optimization), and E (Stochastic Calculus).

Greene, W.H., Econometric Analysis, 5th ed., Pentice Hall, Appendix A (Matrix Algebra)

Spiegel, M.R., Probability and Statistics, Schaum's Outline Series, McGraw-Hill 1975, Ch. 3 (Mathematical Expectation), p. 76-86