



APPLIES TO ACADEMIC YEAR 2008/2009

DRE 4012 Asset Pricing Theory

Program

Responsible for the course
Paul Ehling, Richard Priestley

Department

Term
According to study plan

ECTS Credits
6

Language of instruction
English

This course introduces students to doctoral level development of financial theory. The main purpose is to give rigorous introductions to some of the main analytical issues specific to financial economics. Topics covered include: Review of expected utility, portfolio choice, mathematics of portfolio frontier, arbitrage pricing restrictions, CAPM, APT, aggregation, asset pricing in complete markets, market incompleteness, option pricing, linear pricing, single-period rational expectations equilibrium, and incomplete information equilibria.

Objective

Learning outcome:

To review Absence of Arbitrage (AoA), Primitive Securities, Contingent Claims, Martingales, Change of Numeraire, Optimal Allocations, Equilibrium, and State Price Dealers in a Simple (Normal) One Period Economy

To understand One Period Portfolio Theory

To understand Dynamic Consumption and Portfolio Choices (The Merton Model & Cox-Huang, Karatzas-Lehoczky-Shreve Approach)

To understand The Consumption Based CAPM in Continuous Time

Prerequisites

Admission to a PhD Programme is a general requirement for participation in PhD courses at BI Norwegian School of Management.

External candidates are kindly asked to attach confirmation of admission to a PhD programme when signing up for a course with the doctoral administration. Candidates can be allowed to sit in on courses by approval of the courseleader. Sitting in on courses does not permit registration for courses, handing in exams or gaining credits for the course. Course certificates or conformation letters will not be issued for sitting in on courses

Compulsory literature

Recommended literature

Course outline

1. Review of expected utility
2. portfolio choice
3. mathematics of portfolio frontier
4. arbitrage pricing restrictions,
5. CAPM
6. APT
7. market incompleteness
8. option pricing,
9. linear pricing
10. single-period rational expectations equilibrium

11. incomplete information equilibria.

Readings:

Breeden, D., 1979, An Intertemporal Asset Pricing Model with Stochastic Consumption and Investment Opportunities, *Journal of Financial Economics* 7, 265-96.
Cox, J. C. and C. Huang, 1989, Optimal Consumption and Portfolio Policies when Asset Prices Follow a Diffusion Process, *Journal of Econometric Theory* 49, 33-83.
Cox, J. C. and C. Huang, 1991, A Variational Problem Arising in Financial Economics, *Journal of Mathematical Economics* 20, 465-487.
Detemple, J. B. and F. Zapatero, 1991, Asset Pricing in an Exchange Economy with Habit Formation, *Econometrica* 59, 1633-1657.
Due, J. D. and W. R. Zame, 1989, The Consumption-Based Capital Asset Pricing Model, *Econometrica* 57, 1279-1298.
Dybvig, P. H. and Chi-fu Huang, 1988, Nonnegative Wealth, Absence of Arbitrage, and Feasible Consumption Plans, *Review of Financial Studies* 4, 377-401.
Harrison, M. and D. Kreps, 1979, Martingales and Arbitrage in Multiperiod Security Markets, *Journal of Economic Theory* 20, 381-408.
Karatzas, I., Lehoczky, J. P. and S. E. Shreve, 1987, Optimal Consumption and Portfolio Decisions for a 'Small Investor' on a Finite Horizon, *SIAM Journal of Control and Optimization* 25, 1557-1586.
Lintner, J., 1965, The Valuation of Risky Assets and the Selection of Risky Investments in Stock Portfolios and Capital Budgets, *Review of Economics and Statistics* 47, 13-37.
Markowitz, H., 1952, Portfolio Selection, *Journal of Finance* 7, 77-91.
Merton, R. C., 1969, Lifetime Portfolio Selection under Uncertainty: The Continuous-Time Case, *Review of Economics and Statistics* 51, 247-257.
Merton, R. C., 1971, Optimal Consumption and Portfolio Rules in a Continuous-Time Model, *Journal of Econometric Theory* 3, 373-413.
Merton, R. C., 1972, An Analytic Derivation of the Efficient Portfolio Frontier, *Journal of Financial and Quantitative Analysis* 7, 1851-1872.
Mossin, J., 1966, Equilibrium in a Capital Asset Market, *Econometrica* 34, 768-783.
Ross, S., 1976, The Arbitrage Theory of Capital Asset Pricing, *Journal of Economic Theory* 13, 341-360.
Sharpe, W. F., 1964, Capital Asset Prices: A Theory of Market Equilibrium under Conditions of Risk, *Journal of Finance* 19, 425-442.

Computer-based tools

Course structure

Classes and Homework Problems

Evaluation

Your course grade will be based on the following activities and weights:

30 % class work (in the form of a mix of some/ all of the following: hand in of case write ups, projects, and homeworks; case presentations and class participation; in class midterm and quizzes).

70% 3 hour written final exam.

Both parts of the evaluation need to be passed in order to get a grade in the course.

The course will be graded on the ECTS scale, A to F

Evaluation code(s)

DRE 40121 accounts for 100% of the grade

Aids at the examination

BI-approved exam calculator only

BI-approved exam calculator: TEXAS INSTRUMENTS BA II Plus™.

Instruction manuals can only be used at examinations where "all exam aids" are allowed. In cases where a BI-approved calculator is allowed, only one – 1- such calculator can be brought to the examination premises. In addition one simple calculator can be brought.

Makeup exam

Re-takes are only possible at the next time a course will be held. When the course evaluation has a separate exam code for each part of the evaluation it is possible to retake parts of the evaluation. Otherwise, the whole course must be re-evaluated when a student wants to retake an exam.

Honour Code

Academic honesty and trust are important to all of us as individuals, and represent values that are

encouraged and promoted by the honour code system. This is a most significant university tradition. Students are responsible for familiarizing themselves with the ideals of the honour code system, to which the faculty are also deeply committed.

Any violation of the honour code will be dealt with in accordance with BI's procedures for cheating. These issues are a serious matter to everyone associated with the programs at BI and are at the heart of the honor code and academic integrity. If you have any questions about your responsibilities under the honour code, please ask.