

Lecture plan (Preliminary):

Course: Asset Pricing (Fall, 2021)

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Course outline

Week (Lecture):	Topic:	Readings	Exercise
Week 36(1)	Introduction	DD-2	
36(2)-37(2)	Expected utility and risk aversion	DD-3 + DD-4 (\div 4.6-4.7 and 4.9), utilityTheory.pdf	Ex1
37(2)-38(2)	Mean-variance analysis	DD-5.1-3 + DD-6 (\div 6.6) + DD-8.4 + DD-16.1-2, portfolioChoice.pdf	Ex2
38(2)-40(2)	Capital Asset Pricing Model (CAPM)	DD-8, capmDerivation.pdf, famaMacBeth.pdf, Fama and French (1992), Fama and French (2004)	Ex3
41(1)-42(2)	Arbitrage Pricing Theory (APT)	DD-14, currencyPortfolio.pdf, Fama and French (1993), Jegadeesh and Titman (1993, \div Section 7-8) , Asness et al. (2013), Lustig et al. (2011, \div Section 4)	Ex4
44(1)-45(2)	Consumption-based asset pricing (CCAPM)	DD-10 (\div 10.4 and 10.7), logNormalModel.pdf, Kocherlakota (1996, \div Section 3-4), Savov(2011), Engsted and Møller (2015)	Ex5
45(3)-46(2)	Fixed income securities	CLM-10.1, termStructure.pdf	Ex6
47(1)-48(1)	The expectations hypothesis	CLM-10.2, EH.pdf, Campbell and Shiller (1991), Cochrane and Piazzesi (2005, \div Section 2.B and Sections 3-5)	Ex7
48(2)-49(1)	Term structure models	CLM-11.1.1-2 + CLM-11.2.1, Chan et al. (1992)	Ex8
49(2)	Wrap-up		

Notes

All weeks have two lectures scheduled, except for week 43 in which there are no lectures and week 45 in which we have three lectures. Lectures usually take place Tuesday from 8–10 in M2 and Friday from 12–14 in M2. Please consult the schedule for full information about time of day and lecture room to be continuously updated. The weeks indicated for the different topics are tentative and may change during the course as we progress. Jonas will teach all topics except “Term structure models” which will be taught by Mathias. The mnemonics “DD” and “CLM” refers to the course books: Donaldson and Danthine (2014) and Campbell, Lo, and MacKinlay (1997), respectively (see below). Articles are detailed below as well, along with links to access the articles.

Course books

- Danthine, J-P and J. B. Donaldson (2014): Intermediate Financial Theory (3rd Edition)
<http://www.sciencedirect.com.ez.statsbiblioteket.dk:2048/science/book/9780123865496>
- Campbell, J.Y., A.W. Lo, and A.C. MacKinlay (1997): The econometrics of financial markets. Princeton University Press (Copies available on Brightspace)

Articles

- Asness, C.S., T.J. Moskowitz, and L.H. Pedersen (2003): “Value and momentum everywhere”, Journal of Finance, 68, 929–985
<https://doi-org.ez.statsbiblioteket.dk:12048/10.1111/jofi.12021>
- Campbell, J.Y. and R.J. Shiller (1991): “Yield spreads and interest rate movements: A bird’s eye view”, Review of Economic Studies, 58, 495–514
<http://www.jstor.org.ez.statsbiblioteket.dk:2048/stable/2298008>
- Chan, K.C., G.A. Karolyi, F.A. Longstaff, and A.B. Sanders (1992): “An empirical comparison of alternative models of the short-term interest rate”, Journal of Finance, 47, 1209–227
<https://www.jstor-org.ez.statsbiblioteket.dk:12048/stable/2328983>
- Cochrane, J.H. and M. Piazzesi (2005): “Bond risk premia”, American Economic Review, 95, 138–160
<http://www.jstor.org.ez.statsbiblioteket.dk:2048/stable/4132674>
- Engsted, T. and S.V. Møller (2015): “Cross-sectional consumption-based asset pricing: A reappraisal”, Economics Letters, 132, 101–104
<http://www.sciencedirect-com.ez.statsbiblioteket.dk:12048/science/article/pii/S0165176515001925>

- Fama, E.F. and K.R. French (1992): “The cross-section of expected returns”, *Journal of Finance*, 47, 427–465
<https://doi-org.ez.statsbiblioteket.dk:12048/10.1111/j.1540-6261.1992.tb04398.x>
- Fama, E.F. and K.R. French (1993): “Common risk factors in the returns on stocks and bonds”, *Journal of Financial Economics*, 33, 3–56
<https://www-sciencedirect-com.ez.statsbiblioteket.dk:12048/science/article/pii/0304405X93900235>
- Fama, E.F. and K.R. French (2004): “The Capital Asset Pricing Model: Theory and evidence”, *Journal of Economic Perspectives*, 18, 25–46
<http://www.jstor-org.ez.statsbiblioteket.dk:2048/stable/3216805>
- Jegadeesh, N. and S. Titman (1993): “Returns to buying winners and selling losers: Implications for stock market efficiency”, *Journal of Finance*, 48, 65–91
<http://www-jstor-org.ez.statsbiblioteket.dk:12048/stable/2328882>
- Kocherlakota, N.R. (1996): “The equity premium: It’s still a puzzle”, *Journal of Economic Literature*, 34, 42–71
<http://www.jstor-org.ez.statsbiblioteket.dk:2048/stable/2729409>
- Lustig, H., N. Roussanov, and A. Verdelhan (2011): “Common risk factors in currency markets”, *Review of Financial Studies*, 24, 3731–3777
<https://doi-org.ez.statsbiblioteket.dk:12048/10.1093/rfs/hhr068>
- Savov, Alexi (2011): “Asset pricing with garbage”, *Journal of Finance*, 66(1), 177–201
<https://doi-org.ez.statsbiblioteket.dk:12048/10.1111/j.1540-6261.2010.01629.x>

Course description

Understanding the relation between risk and return on financial assets is at the centre of modern asset pricing. The purpose of this course is to introduce fundamental concepts in portfolio theory, asset pricing, and fixed income analysis, focusing both on theoretical and empirical aspects of the models.

The course introduces the students to fundamental concepts such as choice under uncertainty, expected utility, and the classical mean-variance framework of Markowitz (1952) from which the equilibrium-based Capital Asset Pricing Model (CAPM) will be derived. The model and its shortcomings will be discussed in detail and used as motivation for the introduction of alternative models of expected returns such as the Arbitrage Pricing Theory (APT) and the Consumption-based Capital Asset Pricing Model (CCAPM). Throughout the course, we will pay attention to both the theoretical foundations of the models as well as their empirical validity when confronted with real world data and stylized asset pricing facts and anomalies. This part of the course also includes a discussion of the challenges in long-run portfolio management.

The second part of the course reviews the fundamentals of fixed income securities, including yields, holding-period returns, duration, and convexity, and introduces methods for estimating the zero-coupon yield curve from the market prices of coupon-paying bonds. We then turn to a discussion of the expectations hypothesis (EH), its implications and predictions, and testing its empirical validity. The course ends with an introduction to selected affine term structure models and a discussion of their predictions and how they relate to the EH.

Overview of main topics

1. Expected utility and risk aversion
2. Mean-variance analysis
3. Capital Asset Pricing Model (CAPM)
4. Arbitrage Pricing Theory (APT)
5. Consumption-based Asset Pricing (CCAPM)
6. Fixed income securities
7. The expectations hypothesis
8. Term structure models

Description of qualifications

On successful completion of the course, students should be able to demonstrate

Knowledge and understanding of

- The concepts of utility functions and risk aversion and how they relate to each other and their influence on investor behaviour
- The mean-variance framework for portfolio selection, its assumptions, and the benefits of diversification
- The Capital Asset Pricing Model (CAPM) as an equilibrium theory, its assumptions, its relation to the mean-variance framework, and its empirical failures
- The Arbitrage Pricing Theory (APT) as a no-arbitrage model, its similarities and differences to the CAPM, and how to select and evaluate risk factors
- Asset pricing puzzles such as size, value, and momentum and their implication for standard asset pricing models and market efficiency
- The Consumption-based Capital Asset Pricing Model (CCAPM) as an equilibrium theory, its assumptions, and its predictions about the risk-free rate and risk premia on risky assets and how it compares to the CAPM and APT
- Spot rates, forward rates, yields, holding-period returns, and prices and their relation to each other and the yield curve and the concepts of duration and convexity as well as their applicability to interest rate risk management
- Selected techniques and models (e.g., bootstrapping and the Nelson-Siegel model) to estimating the zero-coupon discount curve from market prices and the implications of the chosen method
- The expectations hypothesis (EH), its empirical validity, and its implications for the behaviour of interest rates
- Selected affine term structure models (e.g., Vasicek and Cox-Ingersoll-Ross) from an asset pricing perspective, their underlying assumptions, and how their predictions relate to the EH

Skills to

- Discuss and evaluate the use of different utility functions and reflect on their implications for the degree of risk aversion and the behaviour of economic agents
- Solve the mean-variance portfolio optimization problem, evaluate and discuss the outcome, and identify the efficient frontier and the location of the tangency and the minimum variance portfolios

- Estimate and evaluate asset pricing models using standard methods and discuss and reflect on the outcome of the tests and the implications for theories and market efficiency
- Evaluate and assess the predictions of asset pricing models using different values of key parameters and discuss and reflect on the implication for the behaviour of investors
- Estimate and evaluate methods for extracting discount and interest rate curves from market prices and compute duration and convexity for fixed income securities
- Test and evaluate the empirical validity of the EH using standard tests and discuss and reflect on the implication for fixed income securities and the behaviour of interest rates
- Estimate and evaluate selected affine term structure models and discuss and reflect on their implications for the behaviour of interest rates

Competences to

- Assess and compare relevant utility functions and discuss and reflect on their appropriateness for modelling investor behaviour
- Identify optimal portfolios, the tangency, and the minimum variance portfolios, and discuss and reflect on their properties and relation to asset pricing theory
- Compare asset pricing models and their assumptions and discuss their similarities and differences and reflect on their empirical and theoretical validity
- Evaluate empirical tests of asset pricing models and discuss and reflect on their implications for asset pricing theories
- Compare selected methods to estimating the term structure of interest rates and reflect on the implications of the selected method
- Discuss and reflect on the implications of the EH and its empirical and theoretical validity for describing the behaviour of interest rates
- Compare selected affine term structure models and discuss their differences and reflect on their implications for the behaviour of interest rates