

Continuous-time portfolio theory

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Syllabus

Overview

This course covers topics in continuous-time asset pricing. We discuss consumption, portfolio choice, and market equilibria with complete markets and standard preferences. We then turn to alternative preference specifications, namely recursive (or stochastic differential) utility and habit formation. Finally, we consider notions of ambiguity aversion and robust control in continuous time. In doing so, the course will walk you through some of the main empirical successes and failures of the existing finance literature.

Two seminars at the end of the course will discuss inference in continuous-time econometric models.

All classes are 3-hour classes. The two seminars are both 1 hour and 30 minutes.

Tentative schedule

Tuesday, January 12

Class 1 (morning): Review of stochastic process theory

Wednesday, January 13

Class 2 (morning): Consumption and portfolio allocation with complete markets

Class 3 (afternoon): Equilibrium in complete markets

Thursday, January 14

Class 4 (morning): Non-standard preferences: recursive utility and habit formation

Class 5 (afternoon): Robust portfolio allocation I

Friday, January 15

Class 6 (morning): Robust portfolio allocation II

Seminar I (afternoon): On estimation in continuous-time finance models

Seminar II (afternoon): Some advanced topics in continuous-time econometrics

Text and Class Notes

- *Required.* Lecture notes. The lecture notes will be handed out in class.
- *Required.* F.M. Bandi and Peter C.B. Phillips (2009). Nonstationary continuous-time processes. *Handbook of Financial Econometrics*, Elsevier. This will also be handed out in class.
- *Optional.* D. Duffie (2001). *Dynamic Asset Pricing Theory*. Princeton University Press.
- *Optional.* J.Y. Campbell, A.W. Lo, and A.C. MacKinlay (1997). *The Econometrics of Financial Markets*. Princeton University Press, Princeton.