

Course ID Dynamic Corporate Finance

1. Course details

Semester:	2
Credit rating:	1 ECTS /15TU
Pre-requisite(s):	Understanding of corporate finance and mathematics.
Lecturer(s):	Thomas Geelen
Administrator:	Roswitha Glorieux
Tutor(s):	
Seminar times and rooms:	Summer semester 2021/2022 10-16 May, schedule TBA
Tutorial times and rooms:	4TU of lectures on Monday, Wednesday, and Friday. 2TU of exercise sessions/office hours on Tuesday and Thursday.
Communications	It is important that students should regularly read their University e-mails, as important information will normally be communicated this way.
Mode of assessment:	Group presentation
Examination Periods:	
Course WebPage:	Moodle.uni.lu

2. Aims and objectives

Aims
Recent advances in dynamic corporate finance. The aim of this course is two fold. First, it further develops understanding of stochastic calculus and dynamic optimization. Second, it examines how these tools are applied in state of the art theoretical corporate finance research. The course will cover several corporate finance topics: leverage and debt maturity choice; investment in innovation; due diligence, cash holdings, and debt runs
This course will provide students with a solid foundation to pursue their own theoretical corporate finance research or use the techniques developed in this course to study other questions in finance and economics.
Learning Objectives
1. Understand the methods used in stochastic calculus and dynamic optimization.
2. Apply these methods to corporate finance decisions.
3. Understand the state of the art in the dynamic corporate finance literature.

3. Plan of semester

This course is designed to provide a framework for understanding several determinants of firms' corporate finance policies. We start by studying mathematical methods (stochastic calculus and dynamic optimization) and then we will apply them to: leverage and debt maturity choice; investment in innovation; due diligence, cash holdings, and debt runs

Lecture 1 (Monday): An introduction to stochastic calculus (stochastic processes, Ito's Lemma, Feynman-Kac formula) and dynamic optimization (Bellman equations and optimal stopping problems).

Exercise Session 1 (Tuesday): Solving a problem set related to the material covered in lecture 1.

Lecture 2 (Wednesday): Using the techniques developed in the first lecture to study the canonical dynamic capital structure model (Leland, 1994) and extensions related to

- Competition/industry equilibrium (Miao 2005)
- Debt maturity (Leland, 1994 and Geelen, 2016)
- Commitment (DeMarzo and He 2020)

Exercise Session 2 (Thursday): Preparing their group presentations.

Lecture 3 (Friday): This lecture covers other corporate finance decisions:

- Cash holdings (Decamps, Gryglewicz, Morellec, Villeneuve, 2017)
- Innovation and growth (Geelen, Hajda, Morellec, 2021)
- Due diligence (Daley, Green, and Geelen, 2021)
- Debt runs (He and Xiong, 2021)

Students will present in groups the above mentioned papers.

4. Reference list/ Bibliography

Daley, Brendan, Thomas Geelen, and Brett Green. "Due diligence." *Available at SSRN 3702560* (2021).

Décamps, Jean-Paul, et al. "Corporate policies with permanent and transitory shocks." *The Review of Financial Studies* (2016)

DeMarzo, Peter M., and Zhiguo He. "Leverage dynamics without commitment." *The Journal of Finance* 76.3 (2021): 1195-1250

Geelen, Thomas. "Debt maturity and lumpy debt." *Available at SSRN 2731636* (2016).

Geelen, Thomas, Jakub Hajda, and Erwan Morellec. "Can Corporate Debt Foster Innovation and Growth?." *Forthcoming Review of Financial Studies* (2021).

Harrison, J. Michael. *Brownian models of performance and control*. Cambridge University Press, 2013.

He, Zhiguo, and Wei Xiong. "Dynamic debt runs." *The Review of Financial Studies* 25.6 (2012): 1799-1843.

Leland, Hayne E. "Corporate debt value, bond covenants, and optimal capital structure." *The Journal of Finance* 49.4 (1994): 1213-1252

Leland, Hayne E. "Agency costs, risk management, and capital structure." *The Journal of Finance* 53.4 (1998): 1213-1243.

Miao, Jianjun. "Optimal capital structure and industry dynamics." *The Journal of Finance* 60.6 (2005): 2621-2659.

5. Further information about assessment

Examination(s)	Group presentation (45-60 min) of recent paper (Lecture 3). Students should show an understanding of the mathematical techniques used and critically discuss the papers.	
Weighting:	100%	
Date:	Final Lecture	
Length:	30 min	
Structure:	Pass/Fail	