



Doctoral School in Finance and Economics

Course ID Dynamic Corporate Finance

1. Course details

Semester:	1
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 2022/2023
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
<p>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.</p> <p>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.</p> <p>It would good to have Mathematica installed before the start of the course.</p>
Learning Objectives
<ol style="list-style-type: none">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 dynamic corporate finance.

3. Plan of semester:

week May 15 4h lecture 9.30-13.30h on Monday Wednesday Friday
exercise on Tuesday 9.30-11.30h and Wednesday 14.30-16.30h
Room: D17

4. Course details (by topics)

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: An introduction to stochastic calculus (stochastic processes, Ito's Lemma, Feynman-Kac formula) and dynamic optimization (Bellman equations and optimal stopping problems). References: Harrison (2013) and Moreno-Bromberg and Rochet (2018).
- Exercise Session 1: Solving a problem set related to the material covered in lecture 1.
- Lecture 2: 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).
 - Refinancing (Fischer et al., 1989; Goldstein et al., 2001).
 - Macroeconomic fluctuations (Hackbarth et al., 2006).
 - Debt maturity (Leland, 1998).
 - Commitment (Dangl and Zechner, 2021; DeMarzo and He, 2021).
- Exercise Session 2: Preparing their group presentations.
- Lecture 3: This lecture covers other corporate finance decisions. Students will present in groups the below mentioned papers:
 - Cash holdings (D'ecamps et al., 2017).

- Innovation and growth (Geelen et al., 2021). – Due diligence (Daley et al., 2021).
 - Debt runs (He and Xiong, 2012).
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5. Reference list/ Bibliography

Daley, B., Geelen, T., and Green, B. (2021). Due diligence.

Dangl, T. and Zechner, J. (2021). Debt maturity and the dynamics of leverage. *The Review of Financial Studies*, 34(12):5796–5840.

D'ecamps, J.-P., Gryglewicz, S., Morellec, E., and Villeneuve, S. (2017). Corporate policies with permanent and transitory shocks. *The Review of Financial Studies*, 30:162–210.

DeMarzo, P. M. and He, Z. (2021). Leverage dynamics without commitment. *The Journal of Finance*, 76(3):1195–1250.

Fischer, E. O., Heinkel, R., and Zechner, J. (1989). Dynamic capital structure choice: Theory and tests. *The Journal of Finance*, 44(1):19–40.

Geelen, T., Hajda, J., and Morellec, E. (2021). Can Corporate Debt Foster Innovation and Growth? *The Review of Financial Studies*.

Goldstein, R., Ju, N., and Leland, H. (2001). An ebit-based model of dynamic capital structure. *The Journal of Business*, 74(4):483–512.

Hackbarth, D., Miao, J., and Morellec, E. (2006). Capital structure, credit risk, and macroeconomic conditions. *Journal of Financial Economics*, 82(3):519–550.

Harrison, M. J. (2013). *Brownian model of performance and control*. Cambridge University press.

He, Z. and Xiong, W. (2012). Dynamic debt runs. *The Review of Financial Studies*, 25(6):1799– 1843.

Leland, H. E. (1994). Corporate debt value, bond covenants, and optimal capital structure. *The Journal of Finance*, 49(4):1213–1252.

Leland, H. E. (1998). Agency costs, risk management, and capital structure. *The Journal of Finance*, 53(4):1213–1243.

Miao, J. (2005). Optimal capital structure and industry dynamics. *The Journal of finance*, 60(6):2621–2659.

Moreno-Bromberg, S. and Rochet, J.-C. (2018). *Continuous-time models in corporate finance, banking, and insurance*. Princeton University Press.

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6. Further information about assessment

Examination(s)	Group Presentation	
Weighting:	100%	
Date:	Final Lecture	
Length:	30 min	
Structure:	Pass/Fail	