Advanced Risk Management

Part I

Lecture and Tutorial (9 ECTS)

Institute: **Institute for Risk Management and Insurance (INRIVER)**

Lecturers: **Prof. Dr. Andreas Richter**
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Time & Location: **Lecture:** Thursday, 12–2 p.m., Room: tba
Tutorial: Monday, 4–8 p.m., Room: tba

Credits: 9 ECTS

Prerequisites: This is a master level class. Basic knowledge of decision theory, finance, and economics is necessary. No written application is required.

Cycle: Winter semester

Course Materials

Class materials will be provided via Moodle. The enrolment key for the Moodle course will be provided via LSF.

Course Description & Main Objectives

During the winter semester 2023/2024, the Masters level class "Advanced Risk Management" is offered in cooperation with the Institute for Capital Markets and Corporate Finance, the Institute for Finance and Banking, and the Institute for Financial Innovation and Technology. The first part will be offered by the Institute for Risk Management and Insurance and seeks to deepen the understanding of why risk management is beneficial. Starting with categorizing different sources of risk for financial and non-financial firms, important aspects of expected utility theory and its connection to financial models are analyzed. Based on the theory of optimal risk sharing and related concepts, the relevance of risk management will be examined. Tutorials will provide a deeper understanding of some theoretical concepts presented in the lecture. Additionally, exercises and case studies will improve the participants' skills for analysing and solving risk management problems.

The second, third, and fourth part of the course will be offered by the Institute for Capital Markets and Corporate Finance, the Institute for Finance and Banking, and the Institute for Financial Innovation and Technology. Topically, it will deal with specific types of risk faced by financial institutions, focusing on market risk and credit risk. Students will learn about concepts and techniques to model and manage these risks. This includes topics such as modelling volatilities and dependence, value-at-risk estimation and hedging using financial derivatives. Portfolio models of credit risk will also be discussed. In hands-on exercises, students will learn how to apply these concepts using MS-Excel.

Exam (Tentative)

A 150-minute written exam will be given at the end of the course.

Tentative time:

February 9, 2024, 12:00 – 16:00
Room: tba

To take the exam, registration via LSF-Portal is **mandatory**.

Timeline (Tentative)

Subject to potential updates, the following lectures (L) and tutorials (T) are planned:

Date	L/T	Content	Readings
19.10.2023, 12:00 – 14:00	L	Introduction and Expected Utility Theory	GRAVELLE/REES (2004), Chap. 19; PRATT (1964)
23.10.2023, 16:00 – 20:00	T	Risk Aversion Measures Problem Set 1	
26.10.2023, 12:00 – 14:00	L	Optimal Risk Sharing and Arrow-Lind Theorem	FOLDES / REES (1997)
30.10.2023, 16:00 – 20:00	T	Stochastic Dominance Problem Set 2	
02.11.2023, 12:00 – 14:00	T	The Standard Portfolio Problem Problem Set 3	GOLLIER (2001), Chap. 4
06.11.2023, 16:00 – 20:00	L	Risk Management Motives	DOHERTY (2000), Chap. 3 and 16; SMITHSON et al. (2005)

Reading List

[1] DOHERTY, Neil A. (2000): *Integrated Risk Management: Techniques and Strategies for Managing Corporate Risk,* New York et al.

[2] FOLDES, Lucien P. and Ray REES (1977): *A Note on the Arrow-Lind Theorem*, **American Economic Review** 67, 188–193.

[3] GOLLIER, Christian (2001): *The Economics of Risk and Time*, 1st edition, Cambridge.

[4] GRAVELLE, Hugh and Ray REES (2004): *Microeconomics*, 3rd edition, Harlow.

[5] PRATT, John (1964): *Risk Aversion in the Small and in the Large*, **Econometrica** 32, 122–136.

[6] SMITHSON, Charles, Rutter Associates and Betty J. SIMKINS (2005): Does Risk Management Add Value? A Survey of the Evidence, Journal of Applied Corporate Finance 17, 8–17.