



APPLIES TO ACADEMIC YEAR 2015/2016

GRA 8207 Risk Management and Real Options

Programme

Executive MBA 2015/2016 - Maritime Offshore track

Responsible for the course

Costas Xiouros

Department

Department of Financial Economics

Term

According to study plan

ECTS Credits

3

Language of instruction

English

Introduction

The recent financial crisis and the growing popularity of financial derivative instruments has brought into light the importance and usefulness of financial risk management both by financial institutions as well as corporations in general. Risk management relies first on properly identifying risk factors and quantifying risk in terms of popular risk measures, such as Value-at-Risk. Secondly, the increasing use of derivative instruments, for example options and futures, offers ways to manage financial risk by altering the risk profile of the corporation. As a result a basic understanding and intuition of derivatives markets and its instruments is essential not only to students and specialists in finance, but also to general business practitioners.

During this course you will learn how to measure risk exposure with respect to e.g. changes in oil prices and foreign exchange rates, how to measure the overall risk and how to hedge these exposures, using derivative instruments, as a way of changing the risk profile of a company. The correct assessment of risk and the correct use of derivative instruments are essential to avoid exposure to additional risks that can bring a company to financial distress. Even though the basic principles of risk management are simple in theory, in practice the correct and intelligent use of risk management is far more complex and difficult. However, identifying those risks that are valuable to manage can add significant value to a company.

The pricing theory of one of the most popular derivative instruments, namely options, finds application in correctly valuing the flexibility of projects, ventures and of corporations in general. The traditional Net Present Value approach for valuing projects has practical difficulties when flexibility is an important element of the project since the appropriate discount rate is difficult to estimate. We will see in this course how the option pricing theory can be applied to real options using simple examples as well as real life cases.

Learning outcome

Acquired knowledge:

The students will acquire the understanding of how to conduct risk management either in a corporation or for a specific project. This also requires an understanding of the derivatives markets and the derivatives securities available for trading. More specifically the students will further their understanding with respect to the following topics:

- The fundamental elements and steps of a complete financial risk management process
- The value and requirement of each of the above steps, e.g. correctly and adequately identifying risk factors
- The principle behind the evaluation of each risk management tool, that is being able to evaluate the pros and cons of each risk management alternative available
- The need for the risk management process to be an integral part of the philosophy and the strategy of the company or the project
- Standard risk measures like Value-at-Risk and Expected Shortfall, their underlying assumptions and the applicability of each.
- The derivatives markets, that is the regulated exchanges and the over-the-counter markets, their participants, their basic functioning and the idiosyncrasies of each
- The structure and the specifics of the basic derivative securities, futures, forwards, options and swaps
- The principles behind the pricing of each of the derivative securities and the correct approach in evaluating them from the perspective of the company or the project, i.e. whether it adds or subtracts value.

The understanding of derivative securities and especially of options will be the basis for establishing a good understanding of the theory of real options in valuing projects where flexibility is important. In particular the students will understand:

- The vast applicability of the real options theory
- The difficulties in using the standard Net Present Value approach for valuing projects where flexibility is important
- The superiority of and the way to apply the option theory for valuing real options

Acquired skills:

During the acquisition of the above mentioned knowledge the students will acquire the following skills:

- Construct a risk management strategy for a company or a project
- Measure risk exposure to a specific risk factor through payoff and profit diagrams
- Quantify the amount of a specific or a number of risk factors with the use of standard risk measures like Standard Deviation, Value-at-Risk or Expected Shortfall.
- Alter the exposure to a risk factor using derivative securities, like options and futures, and measure and plot the final exposure.
- Price forwards and futures using the cost of carry model
- Price options using the Black&Scholes option pricing model
- Identify real options and use option pricing techniques to evaluate them

Reflection:

The basic principles behind the value of risk management and the pricing of derivative securities is the same which has to do with correctly evaluating the pros and cons of each risk management tool. This is the basic idea around which the whole course is built and if sufficiently understood it can be applied to construct a risk management strategy in a way that it adds value to a company or a project.

Prerequisites

Granted admission to the EMBA programme.

Compulsory reading

Books:

McDonald, Robert L.. 2014. Derivatives markets. New International Edition (3e). Pearson Higher Education

Other:

Lecture notes to be handed out in class and/or become available on the course website.

Several case studies and other relevant articles will be handed out in class and/or become available on the course website.

Recommended reading

Books:

Alizadeh H. Amir and Nikos K. Nomikos. 2009. Shipping Derivatives and Risk Management. Palgrave Macmillan.
Robert A. Jarrow and Arkadev Chatterjea. 2013. An Introduction to Derivative Securities, Financial Markets, and Risk Management. Norton, New York

Course outline

- The various elements of the risk management process
- Risk measures
- Derivatives markets
- Derivative securities: Futures, Forwards, Options, Swaps
- Hedging with derivative securities
- Pricing of Forwards and Options
- Capital structure and the value of risk management
- Real options and valuing projects with flexibility

Computer-based tools

Excel, It's Learning

Learning process and workload

1 ECTS credit corresponds to a workload of 26-30 hours.

Attendance to all sessions in the course is compulsory. If you have to miss part(s) of the course you must ask in advance for leave of absence. More than 20% absence in a course will require retaking the entire course. It's the student's own responsibility to obtain any information provided in class that is not included on the course homepage/ It's learning or other course materials

The course is conducted through a total of 16 hours of lectures and casework. The students are expected to read the relevant book chapters and the cases to be covered in class prior to the beginning of the course. During the lecture hours for every topic the learning procedure will be comprised of three basic steps: (i) first presenting the relevant theory, (ii) going through small practical exercises to establish the basic understanding of the principles and the techniques of the particular topic and (iii) studying real life cases that are relevant to the particular topic as well as the scope, purpose and usefulness of risk management in general. The course presents significant new material for the students and for this reason the students are also expected to go through the various case studies and practical exercises on their own time so that all that will have been covered in class will become clear.

Examination

The students will be evaluated by the following elements:

- Class participation and class work: 40 %

· Individual and/or group home written assignment(s): 60 %

The lecturer will decide on the deadline of the written assignment(s) and whether they will be individual and/or group based. If a group assignment is decided the groups will be between 3-4 students each.

This is a course with continuous assessment (several exam elements) and one final exam code. Each exam element will be graded using points on a scale (e.g. 0-100). The elements will be weighted together according to the information in the course description in order to calculate the final letter grade for the course.

Specific information regarding student evaluation beyond the information given in the course description will be provided in class. This information may be relevant for requirements for term papers or other hand-ins, and/or where class participation can be one of several elements of the overall evaluation

Examination code(s)

GRA 82071 - Continuous assessment; accounts for 100 % to pass the program GRA 8207, 3 ECTS credits

The course is a part of a full Executive Master of Business Administration Program and all evaluations must be passed to obtain a certificate for the degree.

Examination support materials**Re-sit examination**

Re-takes are only possible at the next time a course will be held. When course evaluation consists of class participation or continuous assessment, the whole course must be re-evaluated when a student wants to retake a exam. Retake examinations entail an extra examination fee..

Additional information