Dauphine | PSL★
UNIVERSITÉ PARIS

4MFCEZ17 - Derivatives instruments and markets

Professor: Delphine LAUTIER
Contact information:
delphine.lautier@dauphine.psl.eu
christine.lehingue@dauphine.psl.eu
Department: MSO
Semester: 1

Program: Master Finance
Course level: Graduate (M1)
Domain: Business
Teaching language: English
Number of in-class hours: 36
Number of course sessions: 12 + Exam
ECTS: 6

Course description and objectives
- Derivatives Markets
- Main derivative instruments (futures, options, swap)
- Evaluation in discret time and continuous time
- Risk management

- Understanding, on the basis of concrete examples (commodities, interest rates, equities, ...), the functioning of derivatives markets and their organization (OTC markets / organized markets).
- Explain the use of the main derivative instruments such as futures, options and swaps.
- Master the basics of the evaluation of these instruments.

Assignments and grading
This course requires important and steady homework.
At the beginning of each chapter, you will receive precise instructions about the homework that you must do by yourself.
Every lectures, practical questions and exercises are part of the content of this course. You might thus be questioned on them during the exams, even if this has not been done during the classes.

EXAMS
- Mid –term exam: 50%
- Final exam: 50%

The exams will be written in English. You have the choice to answer in English or in French, provided that you keep the same language for all answers.
For each exam, everything, since the beginning of the course, must be revised

The exam will be made of:
- Little questions or multiple-choice questions, for 20 to 50%
- Exercises, for 50 to 80%
- The grades range between 0/20 to 20/20
- A steady work allows a 15/20

Telephones and alphanumeric calculators are not allowed during the exams.

You will have the possibility to see your examination scripts. The date and hours for this consultation will be given in due time. If you are not available, another student can have a look at your copy, provided that he/she can present a letter from you and the copy of your student card. **Please note that outside these hours, you will not be able to see your copy.**

The numerical grade distribution will dictate the final grade. The passing grade for a course is 10/20.

Class participation: Active class participation – this is what makes classes lively and instructive. Come on time and prepared. Class participation is based on quality of comments, not quantity.
Exam policy: In the exam, students will not be allowed to bring any document (except if allowed by the lecturer). Unexcused absences from exams or failure to submit cases will result in zero grades in the calculation of numerical averages. Exams are collected at the end of examination periods.

Bibliography

- Hull J.C, Options, *futures and other derivatives,* 8th and global Ed, Pearson, 2012
- Hull J.C, Options, *futures and other derivatives : solutions manual*, 8th ed., Pearson, 2012.
- The handout associated to the course.

Course Outline

Please note that this outline is for information only.
The content of the chapters and homework might change according to what has been done during classes. The possible modifications will be indicated during classes.

Chapter 1. Introduction to derivative markets and derivative instruments

Chapter 2. The characteristics and the valuation of futures and forward contracts

Chapter 3. Risk management with futures

Chapter 4. The characteristics and the valuation of option contracts

Chapter 5. Swaps and OTC instruments

Chapter 6. Interest rate risk: definition and management with futures contracts

Chapter 7. Credit risk: definition and management with derivative instruments

Detailed Course Outline

Chapter 1. Introduction to derivative markets and derivative instruments

Section 1. The main derivative instruments
Section 2. The organization of trading on derivative markets
Section 3. The economic functions of derivative markets

Reading:
Chapter 1.

Questions and exercises:
- 1.2 ; 1.5 ; 1.6 ; 1.8 (first sentence) ; 1.19.
- 2.19 ;
- see the handout

Chapter 2. The characteristics and the valuation of futures and forward contracts

Section 1. *Spot. Forward. Futures. Options*
Section 2. Contango, backwardation and the storage theory
Section 3. The arbitrage principle and the determination of forward prices on commodities

Section 4. A few examples of futures contracts on commodities
Section 5. The determination of futures and forward prices: generalization
Section 6. The value of a forward / futures contract

Reading:
Chapter 2.
Chapter 5 (excluding paragraphs 5.10 and 5.14).

Questions and exercises :
- 1.1 ; 1.5 ; 1.12 ; 1.19 ; 1.21 (forward only) ; 1.24 ;
- 2.1 ; 2.3 ; 2.4 ; 2.5 ; 2.7 ; 2.8 ; 2.9 ; 2.10 ; 2.11 ; 2.12 ; 2.15 ; 2.17 ; 2.20 ; 2.21 ; 2.22 ;
- 5.2 ; 5.3 ; 5.4 ; 5.5 ; 5.6 ; 5.7 ; 5.9 ; 5.10 ; 5.12 ; 5.15 ; 5.16 ;
- see the handout

Chapter 3. Risk management with futures contracts

Section 1. The mechanism of hedging operations in organized markets
Section 2. Managing the temporal basis
Section 3. The financial results of hedging operations
Section 4. The hedge ratio
Section 5. Financial operations in futures markets

Reading :
- Chapter 3 (excluding paragraphs 3.5 and 3.6)

Questions and exercises:
- 1.18 a) ;
- 2.19 ; 2.23 ; 2.24 ; 2.25
- 3.1 ; 3.2 ; 3.3 ; 3.4 ; 3.5 ; 3.6 ; 3.8 ; 3.10 ; 3.12 ; 3.13 ; 3.14 ; 3.15 ; 3.16 ; 3.17 ; 3.19 ; 3.20 ; 3.21 ; 3.22 ;
- see the handout

Chapter 4. Characteristics and valuation of options contracts

Section 1. Definition and characteristics of an option contract
Section 2. The option's value
Section 3. The determinants of the option's value
Section 4. The four elementary operations with options
Section 5. The Put-Call parity
Section 6. Valuation with the binomial model
Section 7. Introduction to the Black-Scholes-Merton model

Reading :
Chapter 1 : paragraph 1.5 ;
Chapter 9 : 194 - 201 (including the paragraph on terminology), plus paragraph 9.12 ;
Chapter 10, excluding paragraph 10.7 ;
Chapter 12, excluding paragraph 12.10 ;
Chapter 14 ; 299-309 (up to the end of paragraph 14.5).

Questions and exercises:
- 1.3 ; 1.4 ; 1.7 ; 1.9 ; 1.10 ; 1.13 ; 1.14 ; 1.15 ;1.16 ; 1.17 ; 1.18 a) et b) ; 1.21 (options only) ; 1.25
- 9.1 ; 9.2 ; 9.3 ; 9.9 ; 9.10 ; 9.13 ; 9.14 ; 9.15 ;9.16 ; 9.18 ;
- 10.1 ; 10.2 ; 10.3 ; 10.4 ; 10.5 ; 10.7 ; 10.12 ; 10.16 ;
- 12.1 ;12.2 ; 12.3 ; 12.4 ; 12.5 ; 12.6 ; 12.7 ; 12.8 ; 12.9 ; 12.10 ; 12.11 ; 12.12 ; 12.13 ; 12.14 ; 12.15
- 14.1 ; 14.2 ; 14.3 ; 14.4.
- see the handout

Chapitre 5. Swaps and OTC derivatives

Section 1. Risk management with forward contracts
Section 2. Swaps
Section 3. Risk management with OTC options

Reading :
Chapter 7, paragraph 1 to 4
Chapter 11, paragraph 11.2
Chapter 28, paragraph 28.2 (page 653 only) ; business snapshot 28.1 ;

Questions and exercises :
-   1.22 ; 1.28 ;
-   9.11 ; 9.12 ; 9.16 ;
-   7.1 ; 7.2 ; 7.3 ; 7.9 ; 7.15 ;
-   11.15 ;
-   28.1 ; 28.9 ;
-    see the handout

Chapter 6. Interest rates risk: definition and management with futures contracts

Section 1. The nature and extent of interest rate risk
Section 2. Modifying the characteristics of fixed income securities
Section 3. Risk management with futures contracts

Reading:
Chapter 4, except for paragraphs 4.5, 4.7, 4.10
Chapter 6, except for :
-   paragraph 6.1
-   subparagraph untitled « Convexity adjustment » page 140
-   subparagraph untitled « Using Eurodollar Futures… » pages 140-141

Questions and exercises:
-   1.20 ; 1.23 ;
-   4.1 ; 4.2 ; 4.3 ; 4.4 ; 4.8 ;
-   6.3 ;6.4 ; 6.7 ; 6.10 ; 6.12 ; 6.15 ; 6.16 ; 6.17 ; 6.20 ;
-   see the handout

Chapter 7. Credit Risk and its management through derivative instruments

Section 1. Credit risk: definition
Section 2. Measure of credit risk
Section 3. Credit derivatives

Reading:
Chapter 23 : paragraphs 23.1 ; 23.2; 23.3 ; 23.4 (except for the paragraph on Asset swaps) ; 23.5 ; 23.8 ;
read also the paragraph on CreditMetrics pages 541-542.
Chapter 24 : paragraphs 24.1 ; 24.3 ; 24.5 ; 24.6 ; 24.7 ;

Questions and exercises:
23.1. ; 23.2 ; 23.4 ; 23.6 a ; 23.7 ; 23.8 ; 23.13 ;
24.1 ; 24.2 ; 24.3 ; 24.6 ; 24.7 ; 24.8 ; 24.16 ;
- see the handout

![Dauphine | PSL logo]

MyCourse

This course is on MyCourse: **No**

Academic integrity

Be aware of the rules in Université Paris Dauphine about plagiarism and cheating during exams. All work turned in for this course must be your own work, or that of your own group. Working as part of a group implies that you are an active participant and fully contributed to the output produced by that group.

Academic calendar

Dates (Monday/Sunday)		M1 droit / SG / S.ECO/S.SSO **
02/09/19	09/08/19	
09/09/19	15/09/19	1
16/09/19	22/09/19	2
23/09/19	29/09/19	3
30/09/19	06/10/19	4
07/10/19	13/10/19	5
14/10/19	20/10/19	6
21/10/19	27/10/19	7
28/10/19	03/11/19	Holidays
04/11/19	10/11/19	8
11/11/19	17/11/19	9
18/11/19	24/11/19	10
25/11/19	01/12/19	11
02/12/19	08/12/19	12
09/12/19	15/12/19	Review w.
16/12/19	22/12/19	Exams
23/12/19	29/12/19	Holidays
30/12/19	05/01/20	
06/01/20	12/01/20	
13/01/20	19/01/20	