

TEACHING GUIDE

COURSE DESCRIPTION

Course Information	
Full name	Fixed Income Derivatives
Code	0000012217
Degree	Master in Finance
Taught in	Advantere School of Management
Level	Postgraduate Official Master's Degree
Term	Third Quarter
Credits	3,0 ECTS
Type	Elective
Person in charge	Dr. Sara Lumbreras Sancho
Office hours	Continuous availability via email
Professor Information	
Professor	
Name	Dr. Sara Lumbreras Sancho
CV	https://www.iit.comillas.edu/personas/slumbreras
Department	Institute of Technological Research
Area	Advantere School of Management
Email	s.lumbreras@advantere.org ; slumbreras@comillas.edu
Telephone	Tbd
Office hours	Continuous availability via email

SPECIFIC COURSE INFORMATION

Course contextualization

Contribution to the professional profile of the degree

Derivatives (options, forwards and futures) have evolved substantially over the last 30 years in sophistication and variety making them essential to understand and appreciate for any financial market professional. They play a tremendously important role in modern financial markets both as hedging instruments against interest rate or credit risks and as speculative instruments. Through fixed income derivative products we can change the payoff structure and portfolio characteristics making it more or less immune to interest rate or credit risks. Therefore, understanding how these instruments work and knowing how they are priced and valued is of great importance for anyone interested in the financial markets.

The focus of the course is on fixed income derivatives, both in short term products such as futures contracts on Fed Funds, OIS, FRAs, CAPs or FLOORS or Eurodollar contracts and in the medium and long term, Interest Rate Swaps, Credit Default Swaps or Collateralized Debt Obligations.

Fixed income derivatives are eminently wholesale markets, generally moving larger amounts than equities. They are widely used by financial institutions such as banks and insurance companies, asset managers, corporations and even sovereigns. As such, interest rate derivatives are massively used by banks and insurance companies to modify their balance sheet structure, making it more resilient to interest rate changes. They are also used by insurance companies when implementing a correct and efficient asset and liability management. But these instruments are also frequently used by corporations wishing to benefit from a view on interest rates that has a positive impact on their financing conditions.

Objectives

1. The student understands the role of fixed income derivatives in the framework of financial markets.
2. The student learns to value some of the most important fixed-income derivatives for hedging both financing transactions (interest rate risk) and credit risk. financing operations (interest rate risk) as well as credit risk.
3. The student learns to use these instruments in real situations of interest rate risk management of a bank's balance sheet.
4. The student understands the role of collateralized debt in financial markets and how these instruments are structured and priced.

THEMES AND CONTENT

Contents-Themes
MODULE 1: Overnight interest rate derivatives
Topic 1: Fed Funds and Eurodollar
1.1 Fed Funds Futures Contracts
1.2 Overnight Index Swaps
1.3 OIS Valuation
1.4 Eurodollar futures contracts
1.5 Derivation of Swap Rates from Eurodollar Futures
1.6 FRAs, CAPs and Floors
Tema 2: Interest Rates Swaps
2.1 Introduction to IRS
2.2 Valuation of an IRS
2.3 Treasury risk management using IRS and interest rate futures.
2.3 Swaptions
Credit Default Swaps y Collateralized Debt Obligations
3.1 Introduction to CDS.
3.2 Growth, use and abuse of CDS markets.
3.3 Definition of credit event. Settlement and payment in a credit event.
3.4 Valuation of a CDS.
3.5 Credit Linked Notes
3.6 Credit Default Indexes
3.7 Introduction to Collateralized Debt Obligations.
3.8 Structure of a cash CDO and a Synthetic CDO. The concepts of tranches and subordination.
3.9 Valuation of a CDO

Competences – Objectives

General Competences

CG.1 Project-based learning: Ability to develop and execute in its different phases collective financial projects based on real situations, proposing real solutions and making efficient all interactions with the team, clients and any other participants.

RA1: Ability to engage in the development of experimental collective projects based on the real world, managing and aligning the client's needs with the available resources, optimally distributing the work, communicating and projecting its different phases, proposing real solutions and making efficient all interactions with the team, clients and other stakeholders.

CG.3 Teamwork: Apply techniques and methodologies that promote teamwork and mutual collaboration in talent management projects to be carried out with companies and organizations.

RA1: Be committed and cooperate in defined roles to achieve goals related to defined and assigned tasks, activities, projects and responsibilities.

CG.10 Technical Capacity: Capacity of analysis, synthesis and projection, applied to situations, problems and models in the financial field.

RA 1: Be able to deal with the analytical study of cases and scenarios, as well as to carry out synthesis of information and data.

Specific Competences

CE 04: Master the different techniques of valuation and modeling of derivative assets and contextualize them within the advanced management of real investment portfolios.

RA1: Understand the role of derivative products both in arbitrage situations and in the total or partial hedging of financial risks or speculative investment in the various organized and unorganized financial markets in which they are traded, understanding the role played by both leverage and credit risk in the transaction of these products.

RA2: Be able to define, build and program valuation models for interest rate, equity, currency or commodity derivatives using financial mathematics and probabilistic calculus.

RA3: Analysis of fixed income derivatives for total or partial hedging of interest rate risks.

SUMMARY OF STUDENT WORK HOURS

PRESENTIAL HOURS					
Professor Exposition	Student exhibition. Debates and group dynamics	Exercises and problem solving. Elaboration of applied work	Analysis and documentation	Tutorial sessions	Development of real projects for organizations
7	9	12	0	1	1
NON-PRESENTIAL HOURS					
Professor Exposition	Student exhibition. Debates and group dynamics	Exercises and problem solving. Elaboration of applied work	Analysis and documentation	Tutorial sessions	Development of real projects for organizations
0	0	35	23	1	1
ECTS CREDITS: 3.0 (90.00 hours)					

EVALUATION AND GRADING CRITERIA

Graded Activities	Evaluation Criteria	% of Total Grade
Assessment of individual or group work carried out by students, some of them presented in class	<ul style="list-style-type: none"> • Work adequacy to the objectives set • On-time delivery • Goal adequacy and focus • Results achieved • Compliance with deadlines • The participation of ALL members of each team in the presentations and elaborations is required 	50
Performance of oral and written examinations, public defenses and multiple-choice tests, concept tests and resolution of practical cases as exams	<ul style="list-style-type: none"> • Throughout the program, exams or written tests will be given to test the solidity of the concepts acquired. • In order to pass the course, the final exams and tests of each section of the course must be passed. If there are several exams in the same section or block of a course, the weighted average of them must be higher than 5.0 as a necessary condition to pass the course. 	30
Participation and utilization of the classes	<ul style="list-style-type: none"> • When we talk about participation, it is clear that both the positive and negative ones are counted and that the quality of participation is as important as the quantity. The students' participation in class, the quality and timeliness of their interventions, the quality in the preparation and presentation of their work, predisposition and commitment, initiative, attendance. 	20

Grades

The evaluation criteria of the course are governed by the following regulations:

1. All students must comply with 100% attendance on the days set for this course. Any absence must be justified.
2. The final grade corresponds to the sum of the graded activities, evaluation criteria and % of total grade described in the Evaluation and Grading Criteria section.
3. Individual and group work must be delivered on time and in the manner planned by the course professor.
4. A final mark below 5 implies the completion of an extraordinary test. The final grade in this exam may not be higher than the median of those passed at the time of set exams.

The Evaluation Criteria to enroll for a second year

The student enrolled in the course for the second year must comply with the individual and group tasks set by the course professor. The same evaluation criteria described in the Evaluation and Grading Criteria section will be maintained.

For those circumstances not foreseen in this Teaching Guide, the Advantere School of Management Regulations and the Comillas General Regulations will apply.

Health alert criteria:

Students must be permanently identified, in class with an identification sign and remotely with their full name. Students should not change the spaces they occupy in the classroom, until a professor or the program management indicates they can do so.

Failure to comply with any of the health recommendations during class sessions may result in failure of the course

Bibliographies and Resources

Basic Bibliographies
Text Books
<ol style="list-style-type: none">1. John C. Hull, Options, Futures, and Other Derivatives (10th Edition).2. Kerry Back, A Course in Derivative Securities: Introduction to Theory and Computation.5. Sundaresan, S., Fixed Income Markets and Their Derivatives 3rd Edition – February (2009)6. Britten-Jones, M., Fixed Income and Interest Rate Derivative Analysis 1st Edition, 19987. Fabozzi, F., Bond Markets, Analysis, and Strategies, Pearson8. Veronesi, P., Fixed Income Securities, Wiley
Other readings
<p>O’Kane D., Turnbull S., Valuation of Credit Default Swaps. Article in Finance and Stochastics, Jan 2004. https://www.bu.edu/questrom/files/2011/10/A-Teaching-Note-on-Pricing-and-Valuing-Interest-Rate-Swaps-with-LIBOR-and-OIS-Discounting-1.pdf</p> <p>Smith D., Valuing IRS using OIS discounting, article in Journal of Derivatives, May 2013. https://www.treasurer.ca.gov/cdiac/publications/math.pdf</p>
Web pages
<p>https://data.bloomberglp.com/bat/sites/3/2016/10/WhitePaper_Wen.pdf https://financetrainingcourse.com/education/2012/10/using-ois-overnight-indexed-swap-rates-versus-libor-for-irs-pricing/ https://www.anz.com/Documents/FXOnline/FRA.pdf https://interestrates.org/pub/gy0flby2/release/2</p>
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