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| **Title** | **Derivatives and Treasury Management** |
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| **Lecturer** | **Dimitris Andriosopoulos & Andrew Marshall** | Tutor | TBC |
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|  | Code | AG925 | Semester | 2 | Weeks | 1 – 11 | Credits | 20 |  |
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|  | **Assessment** | Examination | 70% |  | Coursework | 15% Simulation Assessment |  | Test | 15% |  |
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|  | Finance | Compulsory |  | Int. Banking & Fin. | Compulsory |  | Investment & Fin. | Compulsory |  | Int. Accounting & Fin. | N/A |  |
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## CLASS AIMS

The aims of this class are to provide a strong grounding in derivatives that may be used to manage the financial risks faced by individuals, financial institutions and business corporations. The class places an emphasis on corporate treasury management and the role of derivatives in managing treasury risk.

In the first part of the class the focus is on the basic principles of derivatives. In particular, we examine futures and forward contracts, options, swaps and credit derivatives, and how these may be used for speculation, hedging, and arbitrage purposes. The emphasis is on understanding the pricing of these derivatives and the strategies devised to hedge long and short positions in underlying assets such as equities, bonds, and interest rates. The role of derivatives in the global financial market is also covered, including a discussion of the difficulties that can arise due to the regulatory framework of derivatives and the (partial) lack of regulation of derivatives.

The aim of the second part of the class is to provide a rigorous introduction to the activities of treasury managers and the use of financial derivatives. We develop the treasury aspect of foreign exchange management into the broader area of multinational finance and consider the basic operation of the foreign exchange market. Emphasis is placed on practical techniques and the solution of problems, though not to the exclusion of theory. It will develop students’ understanding of international finance and capital markets, foreign exchange risk management and derivatives. Derivatives, treasury management and risk management are important growth areas in finance. This class will introduce students to these topics and will provide a good basis studying for professional examinations in the area. The class provides access to a derivatives trading simulation platform and will have a number of connections to industry and the treasury profession,. This class provides an introduction to the role of a corporate treasurer in a multinational company in the management of risk in an international environment, using a range of financial products including derivatives.

## LEARNING OUTCOMES

The class provides opportunities for students to develop and demonstrate knowledge, understanding and skills in the following areas:

**i) Knowledge Based Outcomes:**

 On completing this course students will be able to:

* understand the basic principles of derivatives, in particular futures and forward contracts, swaps and options; and the trading mechanisms for these derivative securities;
* distinguish clearly between speculation, arbitrage, and hedging motives
* understand the strategic use of derivatives in various combinations, hedging strategies, and the pricing of derivatives
* use appropriate models for the valuation of derivative securities;
* use current derivatives data from live sources such as CME and ICE;
* understand the current framework on derivatives’ regulations
* demonstrate an awareness of the biases in conventional pricing models, and how these may be overcome in practice
* show an awareness of the role of derivatives in the global financial crises from 2007 onwards
* explain the day to day activities of a company treasurer;
* understand the role of a corporate treasurer and the significance of derivatives in treasury management;
* understand the functions of the treasurer and solve treasury problems;
* identify the financial risks facing large multinational companies;
* analyse the hedging instruments and assess their suitability in relation to the risks identified;
* understand the workings of the foreign exchange market.

**ii) Skills Outcomes:**

 On completion of this class students should be able to demonstrate that they can:

* Interpret and evaluate financial problems posed both in quantitative and non-quantitative terms.
* Solve practical risk management problems using a case study approach.
* Connect academic theories to the practice of risk management
* Undertake team work and demonstrate communication skills will also be developed in the assignment project
* Use information technology in use of the class web-sites and links, word-processing and spreadsheet skills in workshop preparation and in assessed projects.
* Understand the language and observe the practice of treasury management industry by reading professional treasury journals.

**TEACHING AND LEARNING**

Students will be introduced to the main themes and topics in the lectures. These are reinforced, extended and developed through the discussion of prepared questions in workshops - these questions are to check an understanding of the lecture content and ability to explain the key concepts involved. Active participation in workshops is important and this will be encouraged by tutors to the extent of occasionally requiring short presentations by students. Students will have access and will be strongly encouraged to apply their knowledge on the derivatives trading simulation that will be provided alongside the class. At all times students are expected to supplement their learning by reading the prescribed textbook(s) and be with the most up to date developments via newspapers or web articles along with material uploaded on my place.

**ASSESSMENT**

Assessment is based on a class examination and a case study assignment. The exam will count for 70% of the final mark and the coursework will account for 30% of the final mark (15% simulation assessment and 15% class test). The final examination will take place in the April/May diet of examinations and will be of three hours duration. Any reassessment will be via a re-sit exam of the same format as the main exam. If a candidate does not pass the class at the first attempt, or cannot sit the exam for medical or personal reasons, they will be required to take the re-sit examination.

**READING**

***Recommended****:*

J. C. Hull. “Options, Futures and Other Derivatives”. Pearson 9th Ed., 2017, ISBN13: 9781292212890. (previous editions are acceptable)

***Alternative****:*

Don M. Chance and Robert Brooks “Introduction to Derivatives and Risk Management, Cengage 10th Edition, 2016, ISBN13: 9781305104969.

Rangarajan K. Sundaram and Sanjiv R. Das, “Derivatives. Principles and Practice.” MacGraw Hill 2nd Ed, 2015, ISBN13: 9781259010873.

## LECTURE PROGRAMME

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| **Derivatives – Prof Dimitris Andriosopoulos** |
| **Week** | **Lecture / Tutorial**  | **Subject/Content** |
| **1** | Lecture1 | L1. A: General background on derivatives and module information. Characteristics of futures and forward contracts. Traded contracts and contracts on over-the-counter (OTC) markets. L1. B: Characteristics of Options - calls and puts, intrinsic value and time value. L1. C: American and European options. Payoffs at expiration using examples of exchange traded options.  |
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| **2** | Lecture2 | L2. A: Options strategies, financial engineering, synthetics and combinations (e.g. straddles, spreads, butterflies).L2. B: Put-Call parity L2. C: Binary options pricing modelL2. D: The Black-Scholes-Merton (BSM) pricing model and how it is used in practice.  |
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| Tutorial 1 | Tutorial 1 covering curriculum of previous week |
| **3** | Lecture3 | L3. A. Option delta and the hedge ratio, Option elasticity.L3. B: Overview of the Greek Letters. Risk management based on the Greek letters.L3. C: Futures trading and margin accounts. Stock futures and index futures. L3. D: Motives for trading in futures: speculation, arbitrage, and hedging. Hedge ratio. Perfect and imperfect hedges. |
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| Tutorial 2 | Tutorial 2 covering curriculum of previous week |
| **4** | Lecture4 | L4. A: Pricing of futures, the spot-futures parity theorem, futures prices examples from LIFFE. Mispricing and arbitrage. L4. B: Pricing of forward contracts. Comparison of futures and forward contracts.L4. C: Futures and LIBOR |
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| Tutorial 3 | Tutorial 3 covering curriculum of previous week |
| **5** | Lecture 5 | L5. A: Short term interest rate futures (STIRs). Eurodollar contracts. Hedging with STIRs. Long term interest rate futures – bond derivatives. L5. B: Interest rate swaps - how they work and how to value |
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| Tutorial 4 | Tutorial 4 covering curriculum of previous week |
| **6** | Tutorial 5 | Tutorial 5 covering curriculum of previous week |
| **Treasury Management – Prof Andrew Marshall** |
| **Week** | **Lecture / Tutorial**  | **Subject/Content** |
| **6****AM** | Live session(22nd Feb, 9.30-11.00)Live Session 22nd Feb, 11.30-12.00)Video 1 | Risk Management, what is a company treasurer? The role of a treasurer in different organisations, the development of treasury as a profession, risk Management - What is it? Hedging v. Speculating, and introduction to strategic risks. Interest Rate Risk: Measurement And Management III. Options on interest rates, caps, floors and collars, interest rate swaps and a case study on interest rate risk |
| **7****AM** | Live session(1st March, 9.30-11.00)Live session(1st March, 11.30-12.00)Video 2 | Interest Rate Risk: The framework for the management of short-term and long term interest rate risk. Foreign Exchange, introduction to the foreign exchange markets, spot rates and the forward market, interest rates and purchasing power parity. Interest Rate Risk: Measurement And Management II. Interest rate risk management instruments Interest rate forwards and financial futures. |
| **8****AM** | Live session(8th March, 9.30-11.00 Live session(8th March, 11.30-12.00 Live sessionVideo 3 | Foreign Exchange Risk Measurement and Management I. The management of specific currency risks, transaction exposure, translation exposure, economic exposure and internal versus external hedging.  |
|  | Workshop 1 | Workshop 1 covering curriculum of previous week |
| **9****AM** | Live session(15th March, 9.30-11.00)Live session(15th March, 11.30-12.00)Video 4 | Foreign Exchange Risk Measurement and Management II. Internal hedging methods, specific external instruments used to manage currency risk, foreign exchange transactions and currency forwards  |
|  | Workshop 2 | Workshop 2 covering curriculum of previous week |
| **10****AM** | Live session(22nd March, 9.30-11.00)Live session(22nd March, 11.30-12.00)Video 5 | Foreign Exchange Risk Measurement and Management III. Currency options contracts, currency swaps and case study on currency risk  |
|  | Workshop 3 | Workshop 3 covering curriculum of previous week |
| **11****AM** | 29th March | Class Test |