



Università Commerciale  
Luigi Bocconi

# Preview and Organizational Issues (Prof. Guidolin and Prof. Pedio)

20541– Advanced Quantitative Methods for  
Asset Pricing and Structuring

Spring 2020

# Who are we?

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- Prof. **Massimo Guidolin** is a full professor teaching financial econometrics, statistics, asset pricing and portfolio choice
- To know more about him you can look at <http://didattica.unibocconi.eu/mypage/index.php?IdUte=135242&idr=&lingua=eng>
- Prof. **Manuela Pedio** is a teaching fellow and besides this course, she teaches portfolio choice and quantitative methods for finance; she is a teaching assistant for a course of financial econometrics; she has a previous experience in the financial sector (in derivative sales and structuring)
- To know more about here you can look at <http://didattica.unibocconi.eu/mypage/index.php?IdUte=196456&idr=&lingua=eng>




# How do you contact us?

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- We both hold office hours regularly (look at <http://didattica.unibocconi.it/ricstu/bypersona.php?IdPag=113&utente=135242> and <http://didattica.unibocconi.it/ricstu/bypersona.php?IdPag=113&utente=196456> )

*Contattare il docente tramite e-mail all'indirizzo manuela.pei*

 Dettagli del ricevimento

 **Tutte le date del ricevimento**

- You are always welcome to come and see us during the posted office hours (no need to enroll or to ask permission in advance)
- Office hours always happen in person, not via e-mail, unless in case of major, disruptive events (which means, for example, that the university is closed due to Coronavirus or other catastrophes)
- As a consequence detailed emails concerning the course content or the projects will receive the answer “come and see me at my office hours”

# Goal and structure

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- This course is designed to illustrate how econometric techniques are applied to finance, with emphasis on the measurement of risk and the pricing of multi-asset derivatives
  - The first part of the course is “methodology-oriented”; in this part we will cover a number of advanced topics in econometrics with a special (but not exclusive) focus on **multivariate techniques** (multivariate GARCH, DCC, multivariate Markov switching models, copulas)
  - The second part of the course is focused on the pricing of structured products (CDS, CDO and equity derivative products) and their use in portfolio management
- The material of the course will be made available at <http://didattica.unibocconi.eu/mypage/doc.php?idDoc=24817&IdUte=135242&idr=14063&Tipo=m&lingua=eng>
- Compulsory material is marked with \*
- No formal pre-requisites but a previous knowledge of financial econometrics and derivatives is useful

# Assessment method

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## ■ TRACK 1 (ATTENDING STUDENTS)

- Attending students have to attend to at least 50% + 1 hour of the lectures: no exceptions to this rule will be granted (do not ask, it is already a very mild requirement)
- Attending students should take the exam in May or June
- 11 points will come from a 35-minute closed book exam consisting of one short open question (2/3 points) and a few multiple-choice questions; they will be on **selected topics** (we will communicate which topics are included at the end of the course)
- 14 points will come from two group projects (see next slides)
- 6 points will come from an individual presentation concerning the two projects (to be held after the exam)

## ■ TRACK 2 (NON - ATTENDING STUDENTS)

- 100% of the grade will come from a 2-hour closed-book exam covering all the compulsory material; the exam will contain 4 open questions (8/10 points) and a few multiple-choice questions

# Assessment method (Attending)

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## ■ GENERAL RULES

- Groups should include a maximum of 4 students (groups of less than four students are allowed; solo work is also allowed but strongly discouraged)
- Group composition should be e-mailed to [Manuela.pedio@unibocconi.it](mailto:Manuela.pedio@unibocconi.it) by the 17<sup>th</sup> of February 2020
- Once a group is formed, it will remain the same for both the projects; no changes to the composition or splitting whatsoever will be allowed: the only way to leave a group is to become a non-attending student (the rest of the group can still hand-in the project)
- We shall assume that you will use Matlab for both the projects (because sample codes will be provided in Matlab): to install Matlab on your computer you need to e-mail to [software.bocconi@unibocconi.it](mailto:software.bocconi@unibocconi.it) mentioning the course code
- The use of a different software (Python or R) is discouraged but not forbidden; however no help will be provided for these softwares

# Assessment method (Attending)

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## ■ **PROJECT 1 [7 + 3 points]**

- Project 1 is due on April 6, 2020
- We will provide a replica code (in Matlab) for the paper Rapach, Strauss, and Guofu (2010, RFS)
- Each group will be required to perform a number of modifications to this code and to write a report of 5-7 pages commenting on the results obtained
- More precise guidelines and the project will be provided in the class meeting of February 17, 2020

## ■ **PROJECT 2 [7 + 3 points]**

- Project 2 will be due on May 17, 2020 and will concern the pricing of a structured product (and its use in portfolio management)
- Additional guidelines will be communicated (after Easter)

- After the exam all individual group members will be asked to summarize the results of both projects in a 10-minute presentation