

INVESTMENTS AND PORTFOLIO MANAGEMENT



LISBON
SCHOOL OF
ECONOMICS &
MANAGEMENT
UNIVERSIDADE DE LISBOA

MASTER IN FINANCE
2020 – 2021
CFA Program
Partner of  CFA Institute

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SYLLABUS

PART I – FINANCIAL MARKET STRUCTURE AND INSTRUMENTS

1. Market Organization and Structure
 - 1.1. Functions of the financial system
 - 1.2. Market Classification
 - 1.3. Financial Instruments
 - 1.4. Trading in financial markets
 - 1.5. Security Market Indices
2. Pooled Investments
 - 2.1. Investment Funds
 - 2.2. The process of portfolio management

PART II – THEORY OF PORTFOLIO MANAGEMENT

1. Portfolio Concepts
 - 1.1. Definitions of risk and return
 - 1.2. Emergence of portfolio theory
2. Mean – Variance Theory (MVT)
 - 2.1. Assumptions of MVT
 - 2.2. Combination of two assets
 - 2.3. Including the risk-free asset
 - 2.4. Three or more assets
 - 2.5. Allowing for short selling
 - 2.6. Investment Opportunity sets
 - 2.7. Minimum variance portfolios

- 2.8. Efficient Frontiers and Tangent Portfolios
- 2.9. Safety Criteria in MVT
- 2.10. Internationally diversified portfolios

- 3. Return Generating Models
 - 3.1. Estimating MVT inputs
 - 3.2. Constant correlation model (CCM)
 - 3.3. Single Index Model (SIM)
 - 3.3.1. Underlying ideas
 - 3.3.2. Model assumptions
 - 3.3.3. Characteristics of SIM
 - 3.3.4. A measure of non-diversifiable risk
 - 3.3.5. Using SIM: parameter estimation
 - 3.4. Multi-factor Models (MFM)
 - 3.4.1. Properties of MFM
 - 3.4.2. Factor model equivalence
 - 3.4.3. Using MFM
 - 3.4.4. Fama-French factor model
 - 3.4.5. Carhart factor model
 - 3.5. Estimation risk versus model risk

PART III – SELECTING OF OPTIMAL PORTFOLIOS

- 1. Investors
 - 1.1. Individual investors: pooled investments vs wealth management
 - 1.2. Wealth management principles
 - 1.3. Institutional Investors
 - 1.4. Investor classification and risk-return investment profiling
 - 1.5. Reasons for Investment Policy Statements (IPS)

- 2. Expected Utility Theory (EUT)
 - 2.1. Recap from utility theory under certainty
 - 2.2. Issues of utility theory under uncertainty
 - 2.3. Principle of expected utility
 - 2.4. Risk Tolerance functions
 - 2.5. Optimal Portfolios
 - 2.6. Basics on prospect theory

- 3. Alternatives to Utility
 - 3.1. Maximizing long-term growth
 - 3.2. Stochastic Dominance
 - 3.3. Revisiting Safety Criteria from the investor's perspective

PART IV – MODELS OF EQUILIBRUM IN CAPITAL MARKETS

1. The Capital Asset Pricing Model (CAPM)
 - 1.1. Assumptions of standard CAPM
 - 1.2. The standard CAPM
 - 1.2.1. The market portfolio
 - 1.2.2. The capital market line (CML)
 - 1.2.3. The securities market line (SML)
 - 1.3. Limitations of CAPM
 - 1.4. Non-standards forms of CAPM
 - 1.5. Empirically testing CAPM
2. The Arbitrage Pricing Theory (APT)
 - 2.1. Assumptions of APT
 - 2.2. Estimating and testing APT
 - 2.3. APT versus CAPM
3. Market Efficiency
 - 3.1. Forms of efficiency
 - 3.2. Testing market's efficiency
 - 3.3. Weak versus strong arbitrage
4. Behavioral Finance
 - 4.1. Anomalies in financial markets
 - 4.2. Behavioral issues and APT

PART V – EVALUATING THE INVESTMENT PROCESS

1. Portfolio Performance Evaluation
 - 1.1. Issues of performance evaluation
 - 1.2. Evaluating performance using CAPM
 - 1.3. Other measures of performance
 - 1.4. Problems with performance evaluation
2. Issues in Portfolio Management
 - 2.1. Portfolio management revisited
 - 2.2. Styles of portfolio management: Active vs. Passive Management
 - 2.3. Contemporary issues of Portfolio Management

BIBLIOGRAPHY

Mandatory

Textbooks

Joshi, M. S., and J. M. Paterson (2013). *Introduction to mathematical portfolio theory*. Cambridge University Press.

Elton E.J., M. J. Gruber, S. J. Brown and W. N. Goetzmann (2014), *Modern Portfolio Theory and Investment Analysis*, 9th Edition, Wiley.

Lecture Notes

Gaspar R.M. (2020), *Investments and Portfolio Management*, preprint.

Optional (recommended) readings

Textbooks

Maginn, J. L., Tuttle, D. L., McLeavey, D. W., & Pinto, J. E. (Eds.). (2007). *Managing investment portfolios: a dynamic process*, 3rd edition, John Wiley & Sons.

CFA Readings

Level I

1. Reading # 40 – Portfolio management: an overview
2. Reading # 41 – Risk management: an introduction
3. Reading # 42 – Portfolio risk and return: part I
4. Reading # 43 – Portfolio risk and return: part II
5. Reading # 44 – Basics of portfolio planning and construction
6. Reading # 45 – Market Organization and Structure
7. Reading # 46 – Security Market Indices
8. Reading # 47 – Market Efficiency
9. Reading # 48 – Overview of equity securities
10. Reading # 51 – Fixed income securities: defining elements
11. Reading # 57 – Derivative markets and instruments
12. Reading # 60 – Introduction to alternative investments

Level II

1. Reading # 47 – The portfolio management process
2. Reading # 48 – An introduction to multifactor models
3. Reading # 49 – Measuring and managing market risk
4. Reading # 51 – Analysis of active portfolio management
5. Reading # 52 – Algorithmic trading and high-frequency trading

Level III

1. Reading # 5 – The behavioral finance perspective
2. Reading # 6 – The behavioral biases of individuals
3. Reading # 7 – Behavioral finance and investment processes
4. Reading # 8 – Managing individual investor portfolios
5. Reading # 13 – Managing institutional investor portfolios
6. Reading # 15 – Capital market expectations
7. Reading # 17 – Asset allocation
8. Reading # 18 – Currency management: an introduction
9. Reading # 19 – Market indices and benchmarks
10. Reading # 29 – Execution of portfolio decisions
11. Reading # 30 – Monitoring and rebalancing
12. Reading # 31 – Evaluating portfolio performance

ASSESSMENT

Students have the first two weeks in the semester to decide whether or not they wish to enroll in the **continuous evaluation regime**, or if they prefer to be evaluated based upon the **one exam regime**.

Students under the **continuous evaluation regime** are evaluated based upon several individual and group assignments and have access to the usual two exam seasons. In the first exam season the final grade is the weighted average of all outcomes (including the first final exam). Continuous evaluation outcomes only count for the second exam season final grade if the students fail to pass the course in the first season. I.e. continuous evaluation outcomes do not count when the 2nd seating exam is taken for the purpose of grade increase.

Students under the **one exam regime** have access only to the second exam season and are evaluated only based upon their performance at the second seating exam.

All students are encouraged to *diversify risk* and choose the continuous evaluation regime. Handling all continuous evaluation assignment, students face a variety of different challenges and, thus, learn naturally a large portion of the course material. In addition, real life future tasks related to investments and portfolio management are likely to be similar to the proposed continuous evaluation challenges. So, while studying this curricular unit students also get some real life “experience”.

The one exam regime is only recommended for a very particular group of students, namely those who are taking the course of the second time and have already participated in the continuous evaluation tasks in a previous year, or working students who feel they do not need the market experience. But do not forget ... it is your choice, thus, your risk!

Continuous evaluation regime

Students who decide to enroll in the continuous evaluation regime, should do so by registering their working group in the AQUILA system before the **27th September 2020**.

Each group must have between 3 to 5 students at all times. Groups with less than 5 elements may have to accept other elements during the semester.

The continuous regime is based upon:

- Simulation Game (group) - SG (10%)
- Empirical Assignment (group) - EA (25%)
- CFA-style online Quiz Questions (individual) -QQ (15%)
- First Final Exam (individual) – 1st FE (50%*)

The first season final grade (1st Grade) is computed as

$$\mathbf{1^{st} Grade = 0.1 \times SG + 0.25 \times EA + 0.15 \times QQ + 0.5 \times 1^{st} FE}$$

* it is, nonetheless, still required a minimum of 8 points (out of 20) at the final exam.

The second season final grade (2nd Grade) is computed:

- If the student had a 1st Grade <10, then
 $\mathbf{2^{nd} Grade = \max (0.1 \times SG + 0.25 \times EA + 0.15 \times QQ + 0.5 \times 2^{nd} FE ; 2^{nd} FE)}$
- If the student had a 1st Grade \geq 10, then
 $\mathbf{2^{nd} Grade = 2^{nd} FE}$

One exam regime

All students that do not enroll in the continuous evaluation regime in the AQUILA system before **27th September 2020** automatically chose the one exam regime.

Students who decide to enroll in the one exam regime can only attend the second seating final exam (2ndFE), their final grade will simply be:

$$\mathbf{Grade = 2^{nd} FE .}$$

CALENDAR

IPM students are divided into two slots – class S12 and class S42. Due to COVID pandemic associated restrictions no changes of classes are allowed.

In this course there are both regular LECTURES and TUTORIALS.

LECTURES are of 3h per week -- for Class S12 on Thursdays from 14h to 17h, and for Class S42 on Tuesdays from 14h to 17h. LECTURES are both presential (room: AF21, F1) and online. Students must follow ISEG's rules about which students are allowed in the campus each week (see also concrete calendar below). When not allowed in the campus, students must attend lectures online.

TUTORIALS are of 1.5h per week, always take place online, and are simultaneous to all students (S12+S42) on Fridays, from 14.30h to 16h.

Presential Lectures at ISEG

Health restrictions: Whenever allowed to be present at ISEG's campus, students must: (i) wear face masks all the time in the entire campus (including classrooms), (ii) keep physical distance (2 meters) from colleagues, professors and ISEG's staff, (iii) follow any other rules that DGS (the Portuguese Health Authority) may impose during the semester.

Electronic restrictions: When present in classrooms, students should ideally keep all electronic devices (computers, tablets, mobiles, etc.) totally turned off. If absolutely necessary they should at least be in mute mode, with cameras and microphones off, in order not to interfere with the professor's/room's network and devices, crucial to live stream the class to those that cannot be in the campus.

Students that do not obey DGS and/or the electronic rules described above, cannot attend presential classes. Students that belong to risk groups or feel sick should inform ISEG's administrative staff and should take all classes online.

Online Lectures and Tutorials

Online classes take place in MS TEAMS, where three teams already exist for this course – IPM 2020 (S12), IPM 2020 (S42) and IPM Tutorials (S12+S42).

Detailed Schedule

Find below a detailed schedule for this course that already account for the “Future U” week break, holidays, etc. There may be minor schedule changes during the semester. Those are always announced on AQUILA and TEAMS.

Date and Time	Group	Class Type	Place	Other Info
Week 1 – Only allowed on campus students with ODD numbers				
2020.09.15 TUE 14.00 – 17.00	S42	Lecture 1	AF21, F1 + Online	
2020.09.17 THU 14.00 – 17.00	S12	Lecture 1	AF21, F1 + Online	
2020.09.18 FRI 14.30 – 16.00	S12 + S42	Tutorial 1	Online	StockTrak 1
Week 2 – Only allowed on campus students with EVEN numbers				
2020.09.22 TUE 14.00 – 17.00	S42	Lecture 2	AF21, F1 + Online	
2020.09.24 THU 14.00 – 17.00	S12	Lecture 2	AF21, F1 + Online	
2020.09.25 FRI 14.30 – 16.00	S12 + S42	Tutorial 2	Online	StockTrak 2
Week 3 – Only allowed on campus students with ODD numbers				
2020.09.29 TUE 14.00 – 17.00	S42	Lecture 3	AF21, F1 + Online	
2020.10.01 THU 14.00 – 17.00	S12	Lecture 3	AF21, F1 + Online	
2020.10.02 FRI 14.30 – 16.00	S12 + S42	Tutorial 3	Online	QUIZ 1
Week 4 – NO students allowed on campus. “Future U” week with digital career related activities. No regular classes.				

Week 5 – Only allowed on campus students with EVEN numbers				
2020.10.13 TUE 14.00 – 17.00	S42	Lecture 4	AF21, F1 + Online	
2020.10.15 THU 14.00 – 17.00	S12	Lecture 4	AF21, F1 + Online	
2020.10.16 FRI 14.30 – 16.00	S12 + S42	Tutorial 4	Online	Exercises 1
Week 6 – Only allowed on campus students with ODD numbers				
2020.10.20 TUE 14.00 – 17.00	S42	Lecture 5	AF21, F1 + Online	
2020.10.22 THU 14.00 – 17.00	S12	Lecture 5	AF21, F1 + Online	
2020.10.23 FRI 14.30 – 16.00	S12 + S42	Tutorial 5	Online	Exercises 2
Week 7 – Only allowed on campus students with EVEN numbers				
2020.10.27 TUE 14.00 – 17.00	S42	Lecture 6	AF21, F1 + Online	
2020.10.29 THU 14.00 – 17.00	S12	Lecture 6	AF21, F1 + Online	
2020.10.30 FRI 14.30 – 16.00	S12 + S42	Tutorial 6	Online	QUIZ 2
Week 8 – Only allowed on campus students with ODD numbers				
2020.11.03 TUE 14.00 – 17.00	S42	Lecture 7	AF21, F1 + Online	
2020.11.05 THU 14.00 – 17.00	S12	Lecture 7	AF21, F1 + Online	
2020.11.06 FRI 14.30 – 16.00	S12 + S42	Tutorial 12	Online	Exercises 3

Week 9 – Only allowed on campus students with EVEN numbers				
2020.11.10 TUE 14.00 – 17.00	S42	Lecture 8	AF21, F1 + Online	
2020.11.12 THU 14.00 – 17.00	S12	Lecture 8	AF21, F1 + Online	
2020.11.13 FRI 09.00 – 13.00* 14.00 – 18.00*	S12 + S42	Tutorial 8	Online + AF24*, F1 AF23*, F1	Financial Modelling in Excel (FME 1)
Week 10 – Only allowed on campus students with ODD numbers				
2020.11.17 TUE 14.00 – 17.00	S42	Lecture 9	AF21, F1 + Online	
2020.11.19 THU 14.00 – 17.00	S12	Lecture 9	AF21, F1 + Online	
2020.11.20 FRI 14.30 – 16.00	S12 + S42	Tutorial 9	Online	QUIZ 3
Week 11 – Only allowed on campus students with EVEN numbers				
2020.11.24 TUE 14.00 – 17.00	S42	Lecture 10	AF21, F1 + Online	
2020.11.26 THU 14.00 – 17.00	S12	Lecture 10	AF21, F1 + Online	
2020.11.27 FRI 09.00 – 13.00* 14.00 – 18.00*	S12 + S42	Tutorial 10	Online + AF24*, F1 AF23*, F1	Financial Modelling in Excel (FME 2)
Week 12 – Only allowed on campus students with ODD numbers				
2020.12.01 TUE 14.00 – 17.00	NATIONAL HOLIDAY	NO CLASSES		
2020.12.03 THU 14.00 – 17.00	S12	Lecture 11	AF21, F1 + Online	
2020.12.04 FRI 09.00 – 13.00* 14.00 – 18.00*	S12 + S42	Tutorial 11	Online + AF24*, F1 AF23*, F1	Financial Modelling in Excel (FME 3)

Week 13 – Only allowed on campus students with EVEN numbers				
2020.12.08 TUE 14.00 – 17.00	NATIONAL HOLIDAY	NO CLASSES		
2020.12.10 THU 14.00 – 17.00	S42*	Lecture 11	AF21, F1 + Online	
2020.12.11 FRI 09.00 – 13.00* 14.00 – 18.00*	S12 + S42	Tutorial 8	Online + AF24*, F1 AF23*, F1	Financial Modelling in Excel (FME 4)
Week 14 – NO students allowed on campus. MFWs defenses week. Online classes.				
2020.12.15 TUE 14.00 – 17.00	S12* + S42	Lecture 12	Online	
2020.11.20 FRI 14.30 – 16.00	S12 + S42	Tutorial 13	Online	QUIZ 4