

Introduction

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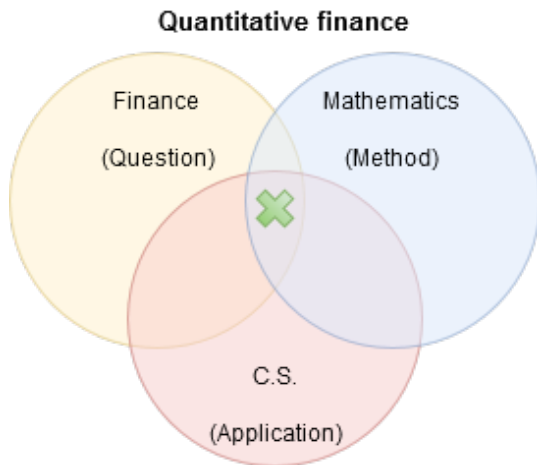
Market risk and portfolio theory

Objectives

Main goal: quantitative understanding of markets, instruments, participants and risks.

- Familiarise with **key concepts and models**
- Use standard models to *study quantitatively* financial markets (asset pricing, constructing portfolio strategies, and measuring risk).
- Use numerical routines to **apply** the above to realistic contexts
- Be **aware of the statistical and numerical limitations and how to deal with them**

Objectives



Contents of the course

Normative models (Q world)

**Market
theory**

**Utility
function**

**Portfolio
choice**

**Risk
measures**

**Performance
measurement**

**Efficient
frontiers**

Equilibrium

Contents of the course ii.

Prescriptive models (P world)

**Factor
models**

Regressions

Backtesting

**Portfolio
management
and
risk
management
in practice**

Plus: Python!

About the course

- Modes of delivery and tools: **Live lectures (!)**, tutorials, online activities via Moodle, programming tasks (using *CoCalc*).

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- Modes of delivery and tools: **Live lectures (!)**, tutorials, online activities via Moodle, programming tasks (using *CoCalc*).
- Evaluation: 20% In-class on Python applied to the course + 80% Final exam
- The course can be very demanding but can also be very rewarding

Tutor: Mr. Daniel Bussell (daniel.bussell.14@ucl.ac.uk)

Expectations....

(... not the probabilistic ones ... yet)

I expect from you

- Ask questions and actively participate
- Read the lecture notes and work on the exercises
- Work on your programming
- Collaborate (except during individual assessment)
- Work continuously

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You can expect from me

- Explain to the best of my abilities
- Propose activities to help you develop your skills
- Give feedback when possible.

Have your say

During your modules you will be asked pulse style surveys to find out how you are getting on.

- These will act as a 'check-in' for staff and making sure you understand the key aspects of the module and assessments.
- The pulse style surveys will be anonymous.
- Helpful comments and ideas from students can help make changes before the modules end, as well as shaping for the future.

You will be asked to complete your Annual Programme Review during Term 3 which will allow you to reflect on your programme as a whole and provide feedback.

What is the role of the financial system?

What are markets and what is their role?

What is risk?

What is a (market) strategy?

Introduction

The financial system has crucial social functions

(Menti)

The financial system has crucial social functions

- Transfers resources through **time** and between **individuals**
- Helps to **Manage risk**
- Provides information to establish **prices**
- Creates ways to pay
- Aggregates and divides resources

Elements in financial system

- Institutions: Agents whose main purpose is to provide financial services (ex: banks, insurers, regulators,...).
- Instruments: Assets that are exchanged. Three main classes: debts (e.g. sovereign, corporate, and ESG bonds), equity (e.g. stocks, ETFs), derivatives (e.g. calls, VIX).
- Markets: "Places" where those exchanges happen "publicly", together with the "rules" governing those exchanges
- Services: Other financial activities (information, credit cards,...)

Risk and market risk

(Menti)

Risk and market risk

Risk

By **risk** we understand the possibility of *financial loss* or *failure* as a *quantifiable* factor in *evaluating* the potential profit in a commercial enterprise or investment.

Market risk

Market risk is the type of risk incurred as a consequence of changes in market value of financial assets.