

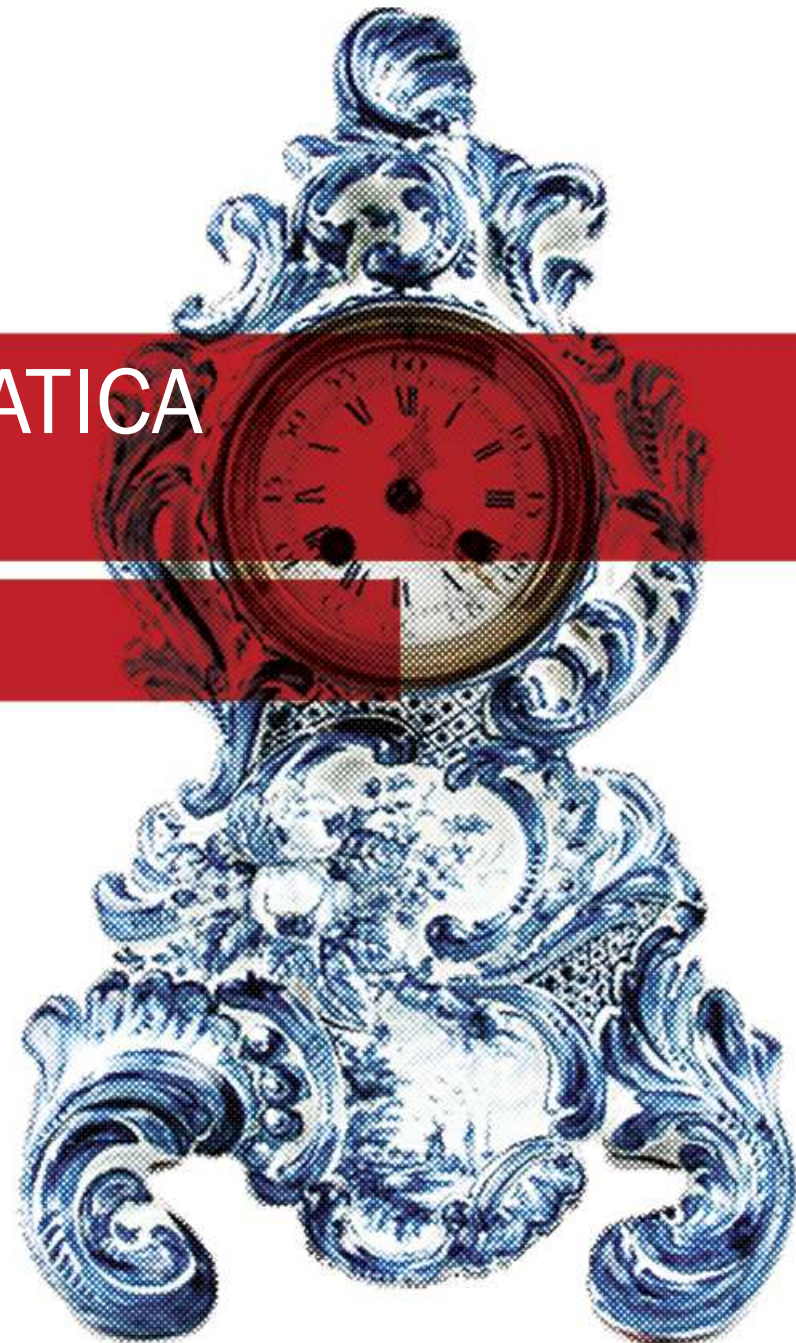
MESTRADO EM MATEMATICA FINANCEIRA & PDG

FINANCIAL THEORY

SPRING - 12



100 ANOS A PENSAR NO FUTURO





Introduction

“Advice is the only commodity on the market where the supply always exceeds the demand.”

Anonymous



Scientific Map

Topics of finance include: public finance, international finance, corporate finance, derivatives, risk management, portfolio theory, asset pricing, and financial economics.

Financial economics is the interface that connects finance to economics.

Financial economics is about trade among agents.

- Agents trade interest bearing, dividends paying assets, derivatives.
- Economic perspective: agents trade time, risks and beliefs on financial markets.
- Aggregation of different valuations at a market equilibrium into market prices.



Financial Economics

Classical Finance: aggregation approach sufficient to describe financial markets. Example:

Trading risks

A farmer is naturally exposed to the risk of falling crop prices. A food company is exposed to the risk of increasing crop prices. In the market for commodities, forwards can be used to agree on a price for a commodity and thus trade risk. Both parties' risk exposure has been reduced.



Arbitrage and excess Returns

An efficient financial market is a market without any further gains from trade. It is arbitrage-free, since arbitrage opportunities give gains from trades. (Arbitrage opportunity: self-financing trading strategy)

Example: Derivative valuation

The payoff of the derivative can be duplicated by a portfolio of the underlying and e.g. a risk-free asset.

The price of the derivative must be the same as the value of the duplicating portfolio.

Why? Otherwise, one could build an arbitrage strategy by shorting the asset and hedging the payoff by holding the duplicating portfolio.



Arbitrage and Excess Returns

An excess return is a return higher than the risk-free rate adjusted by the risk involved.

An excess return is usually no arbitrage opportunity since it carries some risks.

One reason to trade on financial markets is to gain excess returns or “a positive Alpha”.

Since efficient financial markets are arbitrage-free, it is often argued that such gains are not possible and thus one cannot profit from trades.

But: there are more reasons for trading on financial markets: risk and time.

By trading, the risk of an initial portfolio can be controlled, e.g. by buying capital protection (insurance against losses).



Market Efficiency

Double meaning of “efficiency” in financial markets:

1 - Markets are efficient if prices incorporate all information (Fama). Makes paying analysts to research the opportunities and the risks of certain companies worthless since the market has already priced the company reflecting all available information.

2 - Efficient markets do not have any unexploited gains from trade. Allocation on efficient markets cannot be improved by raising the utility of one agent without lowering the utility of some other agent (Pareto efficiency).



Equilibrium

Competitive market equilibrium:

In a competitive equilibrium all agents trade in such a way as to achieve the most desirable consumption pattern, and market

prices are such that all markets clear, i.e., in all markets demand is equal to supply.

Equilibrium prices reflect the relative scarcity of consumption in different states, the agents' beliefs of the occurrence of the states and their risk preferences.

At equilibrium, there are no further gains from trade.

For one given initial allocation there can be multiple equilibria. Which equilibrium is actually obtained depends on exogenous factors.

Asset prices at equilibrium can be determined without knowing all agents' beliefs, risk attitudes and initial endowments.



Time Scale of Investment Decisions

Investors differ in their horizon, information processing and reaction time (day traders vs. investors with long investment horizons).

Intraday price movements reflect how the average investor perceives incoming news.

The very long run price movements are determined by trends in the fundamental data.

Excess volatility (Shiller): stock prices fluctuate around the long terms trend by more than economic fundamentals indicate.

Three different time scales usually used:

Short run (intraday market clearing of demand and supply orders)

Medium run (monthly equalization of expectations).

Long run (yearly wealth dynamics).



Behavioral Economics

A rational investor should follow expected utility theory.

Agents do often not behave according to this rational decisions model.

Concepts of classical (rational) decision theory have often been replaced with a more descriptive approach (“behavioral decision theory”).

Behavioral finance is used to study deviations from perfectly rational behavior.

Example for a behavioral model: Prospect Theory (Kahnemann & Tversky).

Definition of behavioral finance by Richard Thaler:

Behavioral finance is simply open-minded finance. [. . .] Sometimes in order to find a solution to an [financial] empirical puzzle it is necessary to entertain the possibility that some of the agents in the economy behave less than fully rational some of the time.



COURSE

What the course covers:

- 1 Introduction (we are here!)
- 2 Decision Theory
- 3 Two-Period Model: Mean-Variance Approach
- 4 Two-Period Model: State-Preference Approach
- 5 Information Asymmetries on Financial Markets