Foundations of Financial Economics
Introduction

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The course webpage

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The object of finance

- ▶ What is finance ?
- ▶ Going to the core:
  - ▶ finance deals with the **transfer of resources**;
  - ▶ the transfer is **valuable** (to a part or to the whole population);
  - ▶ the transfer process can **create or destroy resources**;
  - ▶ resources take the form of a capital;
  - ▶ any capital generates a flow of incomes;
- ▶ There are several types of transfers.

Finance from a general equilibrium perspective

- Transfer of resources at the micro level (individual saving):
  - intertemporal transfer of resources:
    for consumption smoothing;
    for consuming of durable goods;
    for investment purposes: increase in the amount of resources;
  - transfer between contingencies:
    insurance;
- This transfer only exist if its has value for agents (internal valuation)

Finance from a general equilibrium perspective

- ▶ **Transfer of resources between people** with different:
  - ▶ level of resources;
  - ▶ time profiles of resource collection;
  - ▶ contingency profiles of resources;
  - ▶ types of behavior (patience, risk aversion, etc);
  - ▶ types of information ;
  - ▶ functional roles: consumers, producers, intermediaries;
  - ▶ locations;
  - ▶ etc
- ▶ Again there is a valuation for the transfer at the aggregate level (asset prices, rates of return)

Finance from a general equilibrium perspective

The general equilibrium perspective, on the transfers of resources at the macro level:

- ▶ The transfers among people depend on the existence of a structure of contracts and assets and the markets in which they are traded;

- ▶ Asset prices depend on the aggregate level of transfers people are willing to make (and their excess demand or supply);

- ▶ This feeds back at the micro level: micro decisions depend on the relationship between (micro) internal valuations and (macro) market valuations.

The course: some topics

General equilibrium theory (dynamic and stochastic) on
- ▶ the determinants of the (risk free) **interest rate**
- ▶ the determinants of the **risk premium**
- ▶ **asset pricing** at an aggregate level

In particular we will deal with their **fundamentals**:
- ▶ behavior of agents
- ▶ processes for the resources at the micro and macro levels
- ▶ institutional framework in which contracts are done
- ▶ distribution of agents characteristics

But deviations from fundamentals can occur: asset **bubbles**

The course: main questions

- ▶ How do agents behave in intertemporal and uncertain environments ?
- ▶ What is the effect of an increase in wealth on the equilibrium interest rate ?
- ▶ How does saving (from the supply side) reacts to changes in interest rates ?
- ▶ What is the difference between individual and aggregate risk ?
- ▶ Do asset market provide for insurance ?
- ▶ How can risk be priced at the macroeconomic level ?
- ▶ How does the aggregate price of risk relates to asset pricing ?
- ▶ How do rates of return relate to distributional issues ?

Main evidence:

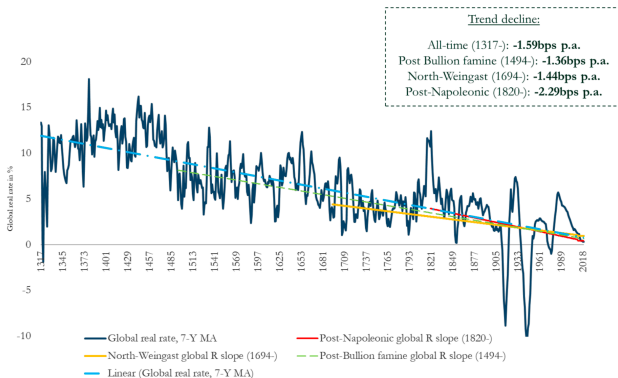there is a secular downward trend for the real interest rate

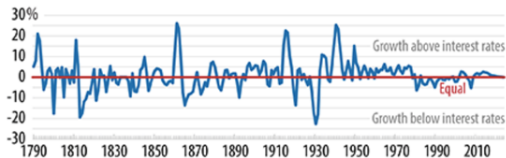Figure IV: Headline global real rate, GDP-weighted, and trend declines, 1317-2018.

Figure: source: Schmelzing (2020)

Main evidence:

the fundamental: rate of interest and rate of growth are closely related

Economic Growth And Interest Rates Have Become More Closely Aligned

Growth rate relative to the interest rate

Source: CBPP analysis of data from OMB, CBO, *Historical Statistics of the United States*, and MeasuringWorth.com.

CENTER ON BUDGET AND POLICY PRIORITIES | CBPP.ORG

http://www.cbpp.org/research/federal-budget/difference-between-economic-growth-rates-and-treasury-interest-rates
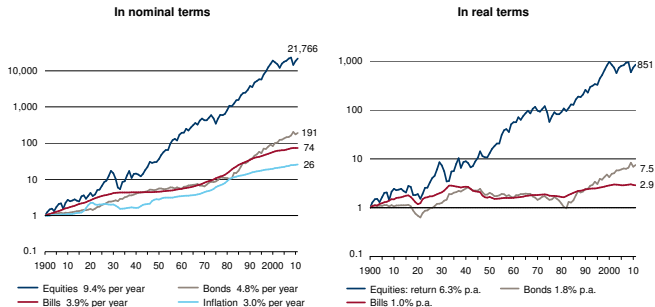
Main evidence:

Historical series on RoR, GDP and financial crises

▶ Jordà and all (2019): historical rates of return

▶ Schmelzing (2020): historical interest rates

▶ Paul (2018): financial crises and productivity

Main evidence

Equity premia: there is clearly a price for risk

Figure 1: Cumulative returns on US equities, bonds, bills and inflation, 1900–2010

In nominal terms

In real terms

Equities 9.4% per year
Bonds 4.8% per year
Bills 3.9% per year
Inflation 3.0% per year

Equities: return 6.3% p.a.
Bonds 1.8% p.a.
Bills 1.0% p.a.

Figure 2: Real annualized returns (%) on equities versus bonds and bills internationally, 1900–2010

Evidence

Equity premia: the price for risk is different for different countries

Figure 3: Real annualized equity returns (%) in local currency and US dollars, 1900–2010
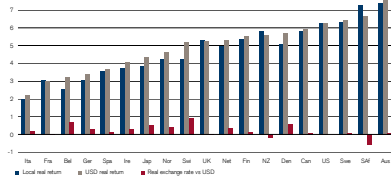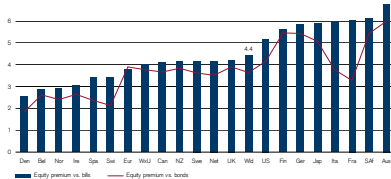
Source: Elroy Dimson, Paul Marsh, and Mike Staunton, *Triumph of the Optimists*, Princeton University Press, 2002, and subsequent research.

Figure 4: Worldwide annualized equity risk premium (%) relative to bills and bonds, 1900–2010

Source: Elroy Dimson, Paul Marsh, and Mike Staunton, *Triumph of the Optimists*, Princeton University Press, 2002, and subsequent research. Premiums for Germany are based on 109 years, excluding hyperinflationary 1922–23.

Main evidence

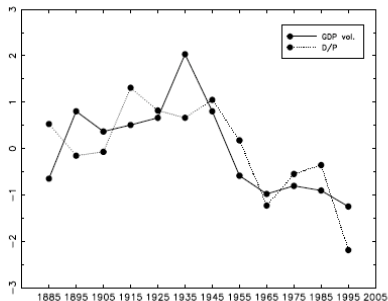Fundamental: financial volatility is also closely related to real volatility

Figure 3
GDP volatility and the D/P ratio—Prewar evidence
This figure plots the standard deviations of GDP growth and the mean D/P ratio by decade starting in 1880 until 2000. Both series are demeaned and divided by their standard deviation. The GDP data are from Ray Fair's website (http://fairmodel.econ.yale.edu/RAYFAIR/PDF/2002DTBL.HTM) based on Balke and Gordon (1989). The dividend yield data is from Robert Shiller's website (http://aida.econ.yale.edu/~shiller/data/ie_data.htm).

Figure: US: dividend/price volatility and GDP volatility: in Damodaran (2012)

The course's options

- This is a **HUGE** field, therefore we have to make choices:
  - we study (mostly) two-period and multi-period discrete-time versions of a **simple** benchmark model;
  - we try to get explicit solutions whenever possible
  - we compare the macroeconomic, microeconomic and finance perspectives
  - we deal (mostly) with endowment economies (i.e, output is given)
  - we compare theoretical results with the relevant stylized facts (when possible)
  - we provide an introduction to financial frictions and their aggregate effects

The course's options

We do not deal thoroughly with, but can cover simple cases, v.g :

- ► theory of decision making under uncertainty
- ► theory of intertemporal decision making under uncertainty
- ► financial frictions (v.g., information imperfections and contract theory)
- ► corporate finance
- ► detailed pricing of financial instruments
- ► financial intermediaries (banks)
- ► monetary policy and fiscal policy
- ► open economies and international capital markets
- ► financial bubbles and financial crashes
- ► numerical computation of DSGE models
- ► specialized aspects: behavioral finance, game theory, inequality, environmental aspects, etc.