UNIVERSITÀ
DEGLI STUDI
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Financial Assets (2)

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Financial Instruments and Markets (6 CFU)

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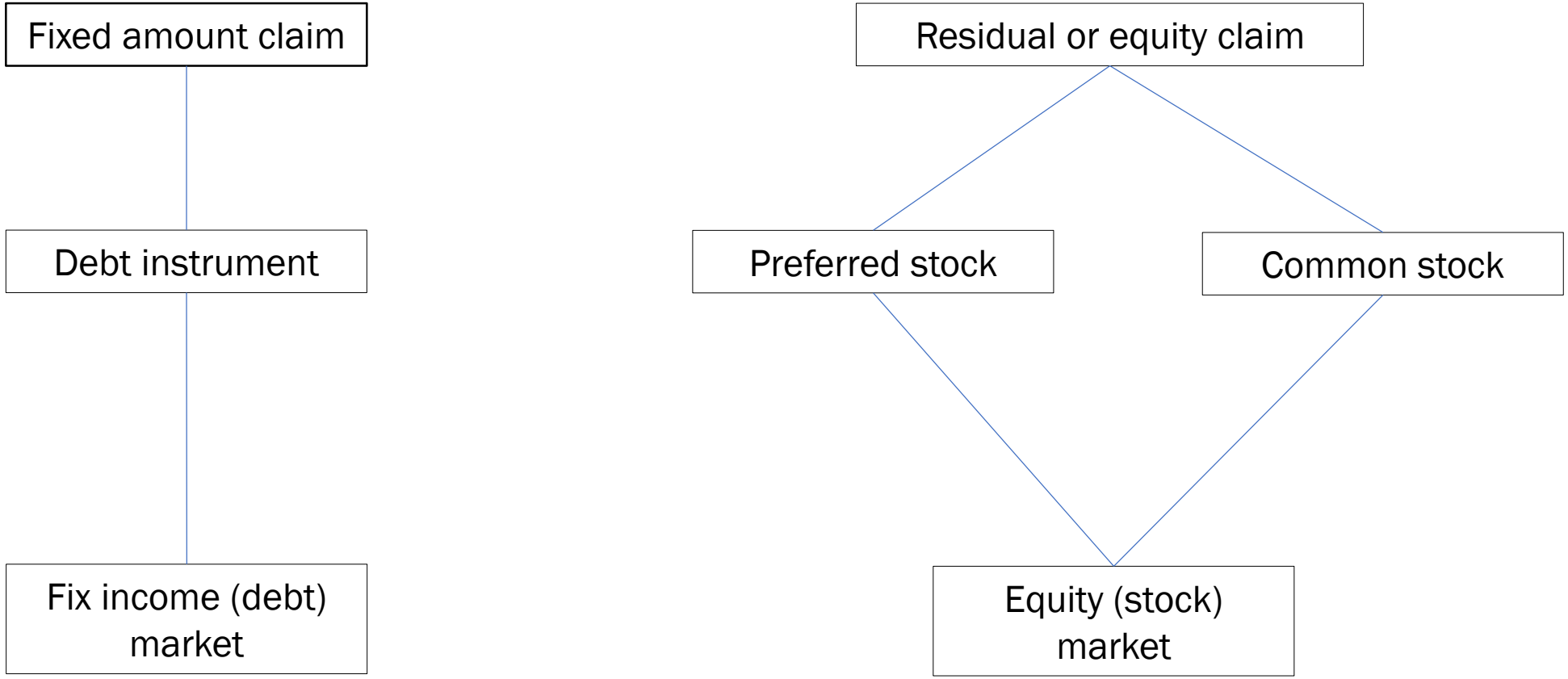
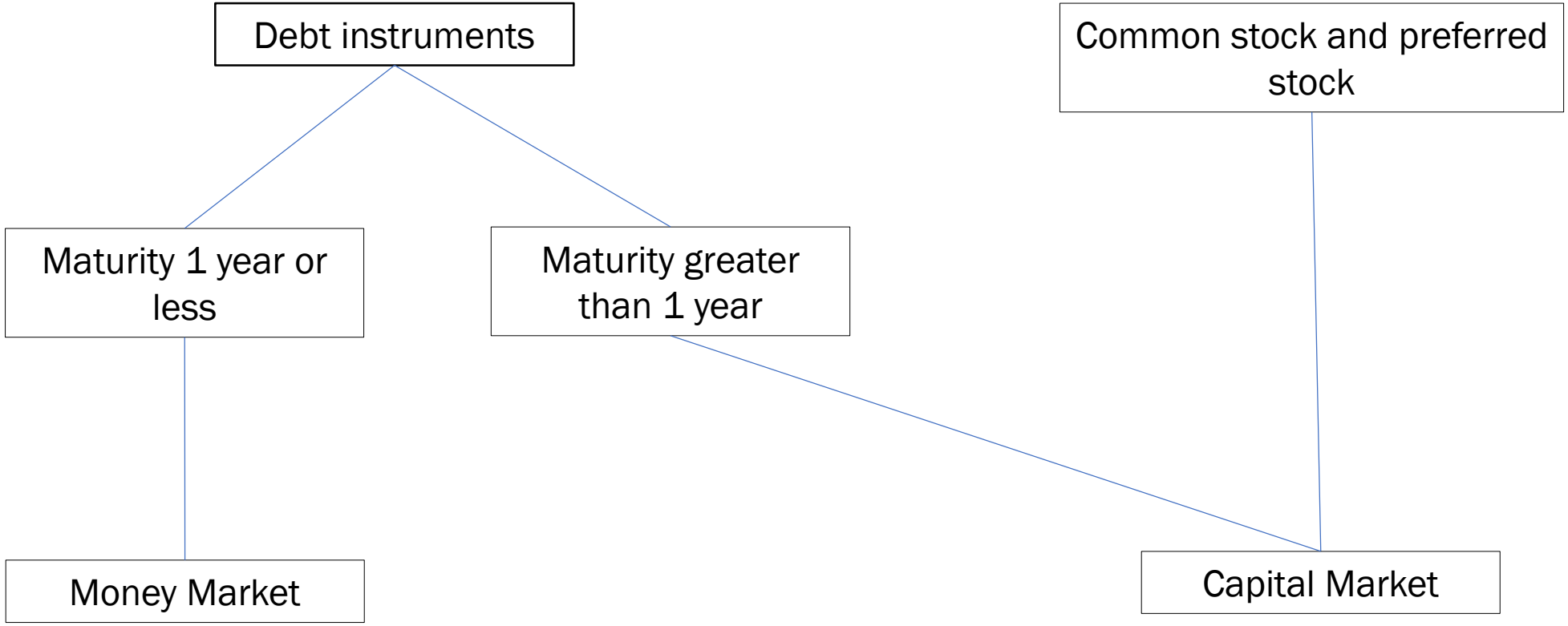
Financial Assets: classification by financial claim



Financial Assets: classification by maturity of the claims



Classes of financial assets

- **Fixed income or debt instruments:**
  - Promise to pay a pre-determined stream of cash flows in the future;
  - Debt (Bond) market.
  - Money market: short-term (less than one year), low-risk* debt instruments, typically very liquid.
- **Equity instruments:**
  - Residual claim;
  - Represents ownership shares of a corporation.
- **Derivative securities:**
  - Contracts that derive their value from the underlying financial assets.

Aims of the lesson (Section 1)

- Introduction to derivatives;

- What is an **option contract**?
  - What are some key option terms?
  - What are option payoffs?

Introduction to derivatives

- Derivatives can be used to eliminate risk (perfect hedging) or to reduce risk (hedging with basis risk);

- Derivatives **are financial instruments** whose promised payoffs **are derived** from the value of something else, generally called the **underlying**;

- When the price of the underlying changes the price of the derivative also changes (e.g., the value of a derivative is derived from the value of gold).

Introduction to derivatives

- Derivatives may be classified using different criteria:
  - **Underlying asset**: traditionally underlying assets were commodities or financial assets. In the last years the numbers and typology of underlying increased significantly. Today we have:
    - *Financial derivatives: (interest rates, currencies, stocks, indexes, bond…);*
    - *Commodity derivatives: (oil, coffee, sugar, orange juice..);*
    - *Credit derivatives;*
    - *Energy derivatives;*
    - *Weather derivatives.*

Introduction to derivatives

- Derivatives may be classified using different criteria:
  - **Contract typology**:
    - **Options**: right to buy or sell at a given price (exercise or strike price) at (European) or within (American) a certain date a given amount of the underlying asset. They imply the payment of a premium. They are traded both OTC and other the counter;
    - **Futures:** obligation to buy or sell an underlying activity at a future date and at a specified price. Exchange Traded;
    - **Forwards**: obligation to buy or sell an underlying activity at a future date and at a specified price. OTC contracts;
    - **Swaps**: Exchange of a stream of cash flows. Forwards contract in time. OTC contracts.

Introduction to derivatives

- Derivatives may be classified for **different uses**:
  - **Hedging**: use derivative to reduce risk (farmers, oil company, floating rate borrowers, etc…). They provide economic balance to the market;
  - **Trading or Speculation**: use derivative to acquire risk. Speculation in derivatives may be very risk. They provide liquidity to the market;
  - **Arbitrage**: taking advantage of a price differential between two markets. They help bringing equilibrium and transparency to the price.

Introduction to derivatives

- Some data on derivatives can be find here:

https://stats.bis.org/statx/srs/table/d5.1?f=pdf

- **Notional amount:** is the nominal amount used to calculate payments. The notional or nominal amounts outstanding provide a measure of market size and a reference from which contractual payments are determined. This amount is not those truly at risk;
- **Market value**: is the estimated amount for which a property should exchange on the date of valuation between a buyer and a seller (international valuation standard) "*the price at which one can contract*", "*the true underlying value*". **It is the cost of replacing all outstanding contracts**. **It represents the maximum loss that market participants would incur if all counterparties failed to meet their contractual payments and the contract were replaced at current market prices**.

Options (1)

- An **option contract** gives its owner the right, but not the obligation, to buy or sell the “underlying” asset at a fixed price on or before a given date;
- **CALL OPTIONS**: gives the owner the right, but not the obligation, to buy the underlying by a certain date for a certain price;
- **PUT OPTIONS**: gives the owner the right, but not the obligation, to sell the underlying by a certain date for a certain price;
- There is a cost to acquiring an option and is called **option premium**.

Options (2)

- Whereas it costs nothing to enter into a forward or futures contract, there is a cost to acquiring an option. This is called the **option premium**;
- American vs. European options;
- A European option **can only be exercised** at the expiration dates;
- An American option **can be exercised** anytime, up to the expiration date.

Options

- **Example**: consider a call option on a share of Microsoft with an exercise price of $20. Let is suppose that the expiration date is in four months, and the price of an option is €5. The current stock price is $11;

- **Example**: consider a put option on Microsoft stock with an exercise price $90. Suppose the current stock price is $85, the expiration date of the option is in three months, and the option price is $7.

Aims of the lesson (Section 2)

- What is a **forward and a futures contract**?
  - What are some key forward and futures terms?
  - What is the difference between a forward and a futures contract?
  - How do they differ from option contracts?

Futures and Forward contracts

- Consider a crude oil producer and a manufacturing that uses crude oil;
- Both are concerned about the future price of crude oil;
- Bot are concerned about price risk;
- Forward and futures contracts help manage this risk by sharing the price risk.

Futures and Forward contracts

- A **forward** or **futures contract** is an agreement between two parties to by or sell an asset at a certain future time for a certain price;

- The party who commits to buying the asset has the **long position**;

- The party who commits to delivering the asset at contract maturity has the **short position**.

Futures

- Unlike in the case of options, a futures contract obliges the long position to purchase the asset at the future prices, and similarly for the short position;
- No money is exchanged when the futures contract is entered into;
- Futures contracts are traded on organized exchanges:
  - Chicago Board of Trade (CBOT);
  - Chicago Mercantile Exchange (CME).
- Contracts are standardized to facilitate trading;
- The presence of a clearinghouse eliminates counterparty risk;
- A wide range of commodities (e.g., pork belly, live cattle, sugar, lumber, copper, etc…) and financial assets (e.g., stock indices, currencies, Treasury bonds, etc…) form the underlying asset in various contracts.

Forwards

- Forward contracts are traded over the counter;
- Contracts are customized;
- Foreign exchange forward contracts are widely used to hedge currency risk.