FINANCIAL MARKETS AND INSTITUTIONS

INTRODUCTION TO RISK MANAGEMENT, DERIVATIVES AND HEDGING

A.Y. 2017/2018

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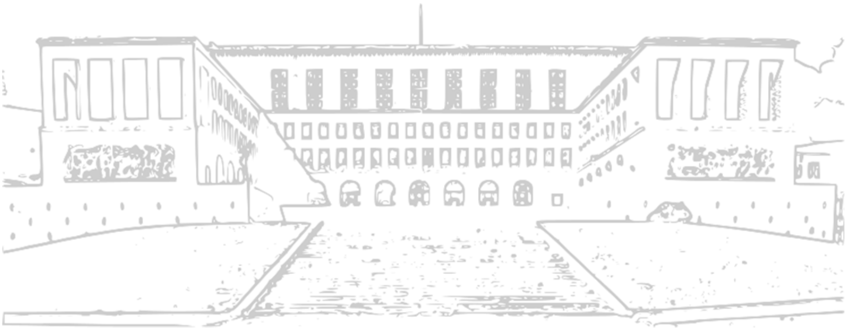

DEAMS
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DERIVATIVES, HEDGING AND RISK MANAGEMENT

- Hedging: protection through a **transaction offsetting another**
- **Micro-hedging** / **macro-hedging** / **cross-hedging** / **partial hedging**
- Very efficient with derivatives:
  - limited or no initial investment
  - settled at a future date
  - value depends on an external underlying variable
- Main derivatives:
  - **forward/future** contracts,
  - **options**,
  - **swaps**
  - **credit derivatives**

Some statistics:
https://www.bis.org/statistics/derstats.htm

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Forward/future contracts

- Two parties agree on settling a **transaction** (on stocks, bonds, IR, …) at a specific **future date** at a **fixed price** (**strike price**)
- Forwards are **OTC**, **finding counterparties is difficult**, are **illiquid** and expose to **credit risk**
- Futures are standardized and exchange-traded:
  - clearing houses absorb credit risk through day-by-day margin requirements
  - constant negotiability and higher liquidity
  - standardisation and extension of deliverables increase market volumes

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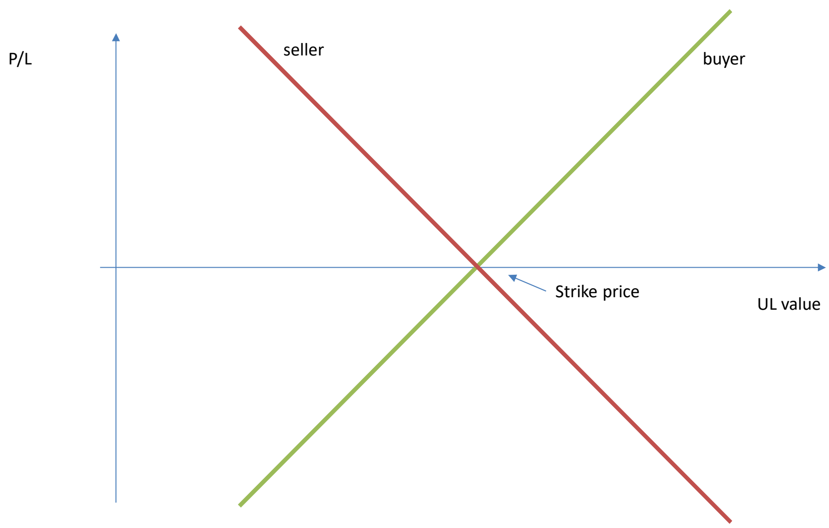
Forward/future payoff



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Options

- **Plain-vanilla**:
  - a party gets the **faculty/right** to buy (**call**) or sell (**put**) the underlying
  - at a specific **strike price**
  - within (**American**) or at (**European**) a specific future date
  - from a counterparty (**writer**)
  - by paying a **premium**
- Changing features leads to "exotic" options (f.i. basket, Asian, path-dependent, rainbow, …)
- Require a stable fixed investment (premium) instead of volatile margins
- The premium is the "price" of the **asymmetry**: the stronger the expectation on the faculty/right, the bigger its level

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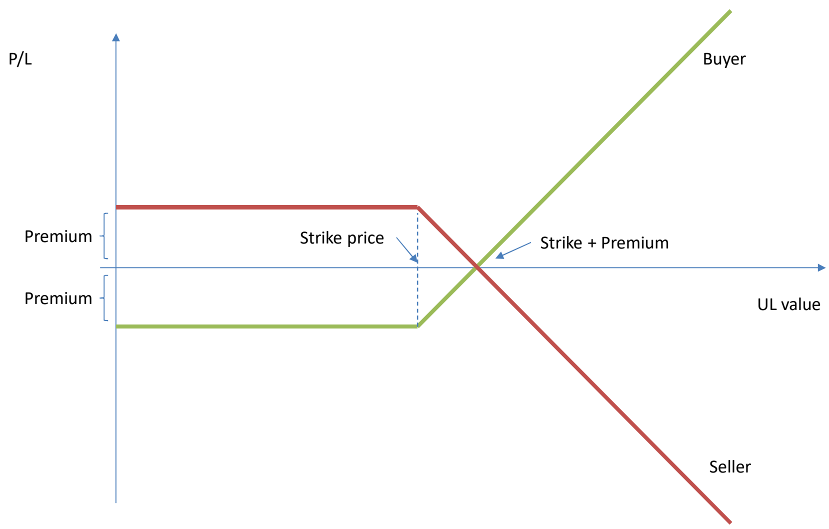
Option payoff: call



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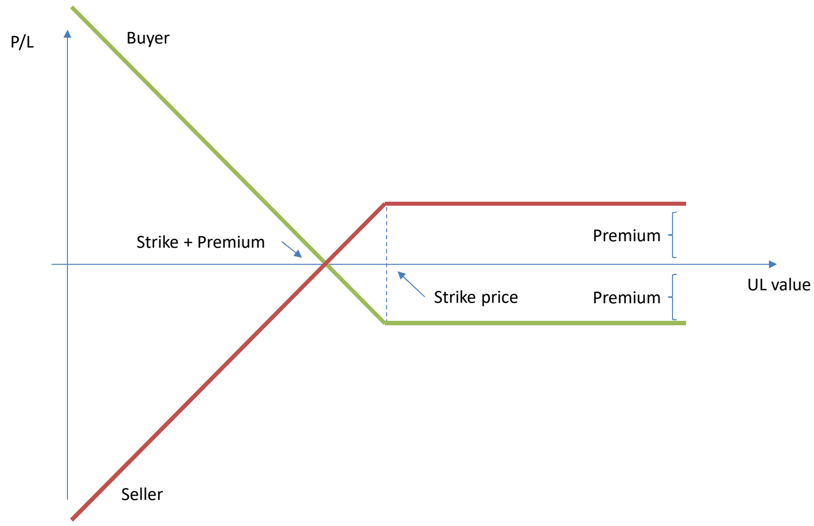
Option payoff: put



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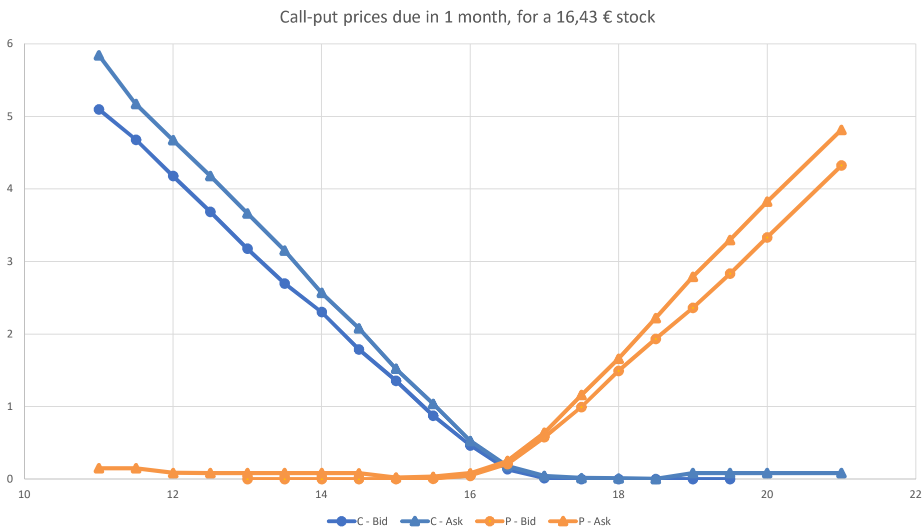
Example



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Swaps

- Each party pays to the other a stream of payments at specific dates within a medium/long maturity date (basically, the net balance)
- Each party has a long exposure ("leg") and a short exposure simultaneously at each settlement date
- Typically, the two streams differ for currency (f.i. € Vs. $) or IR (f.i. variable Vs. fixed) underlying streams
- OTC: illiquid, credit risk, but tailor-made

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Swap payoff example

5y swap, «A» pays EURIBOR1y+100bps, «B» pays 1.5%, on a 1 mln € notional

	2017	2018	2019	2020	2021
EURIBOR1y	-0.1	-0.2	0	0.5	1

Results:

	VARIABLE	FIXED	Net (for «A»)
2017	9.000	15.000	+6.000
2018	8.000	15.000	+7.000
2019	10.000	15.000	+5.000
2020	15.000	15.000	0
2021	20.000	15.000	-5.000

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Credit derivatives

- OTC in large denominations
- *Protection buyers* pay a premium (usually periodic) to the *seller*
- *Seller* pays the notional to the *buyer* in case of a *credit event* (default, rating downgrade, …) of a *reference entity*
- *Total return swaps* (TRS) similar to swaps: they exchange a given (variable/fixed) rate with the return and capital gain of a reference asset (so, they transfer credit *and* market risks)
- *Credit-default-swap* (CDS) differ: *sellers* pays only if the credit event occurs, receiving a premium meanwhile
- *Credit-linked note (CLN)*: structured bonds with the option, triggered by credit events, to receive lower coupons, a recovery value or similar features