



FESE Capital Markets Academy
Derivatives & CCPs

The Speaker and Moderator



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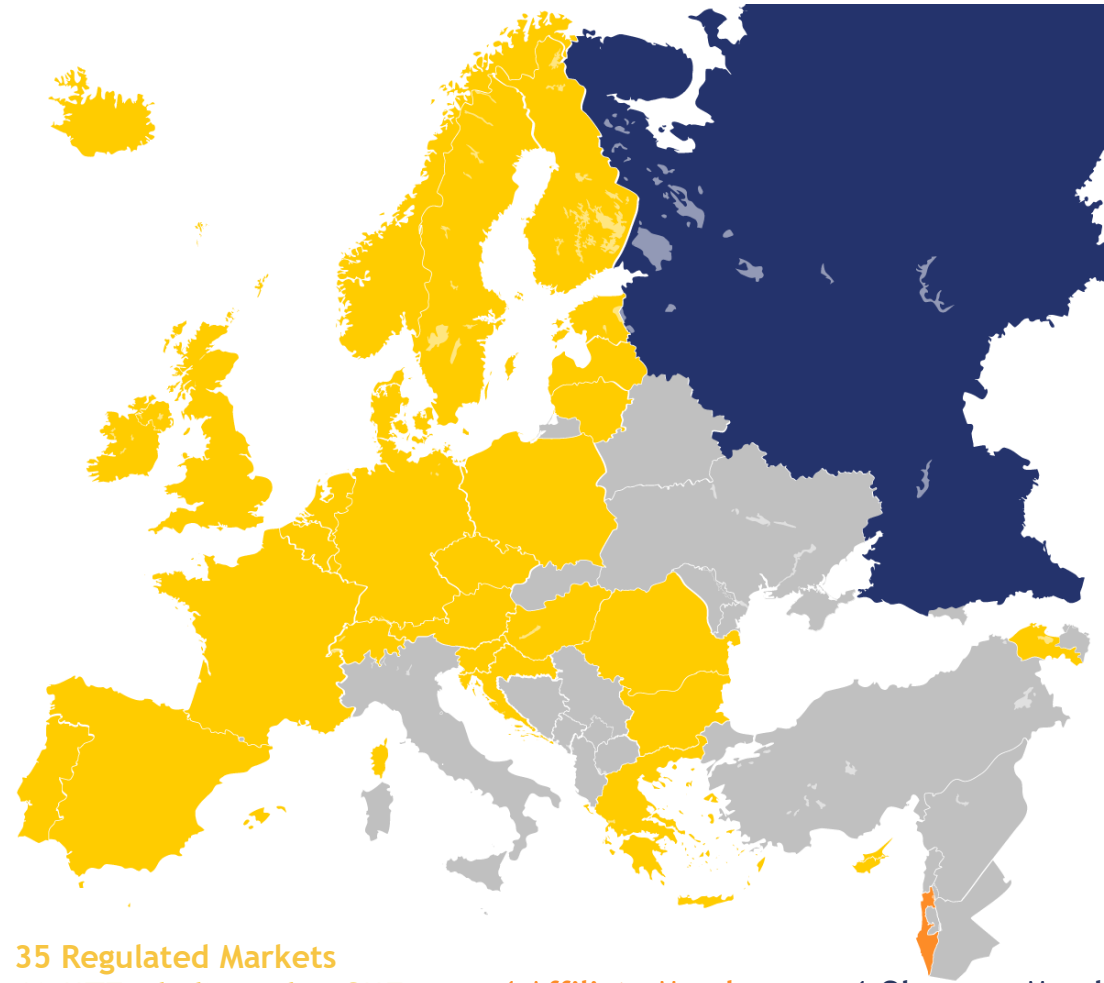
FESE - Federation of European Securities Exchanges

FESE represents **36 Exchanges** in equities, bonds, and derivatives

13 Multilateral Trading Facilities (MTFs) dedicated to listing and trading of SMEs

From **EU member states** as well as **Iceland, Norway and Switzerland**

19 Full Members, **1 Affiliate Member** and **1 Observer Member**



35 Regulated Markets

13 MTFs dedicated to SMEs

1 Affiliate Member

1 Observer Member

Key figures: European Financial markets



~11,000
Listed companies



~€13,000 bn
Market cap for
listed companies



~€32bn
Money raised at IPO



~€8.5 tn
Equity turnover



~€600 tn
Options and
futures notional
turnover



~€6 tn
Bonds turnover

Source: FESE and WFE, EOB turnover, 2018 data

What you will learn today



1.

What is a derivative? Why and by whom are derivatives traded? Where are they traded (Exchanges vs OTC Markets)?



2.

What are the main functions of a Central Clearing Counterparty (CCP)?

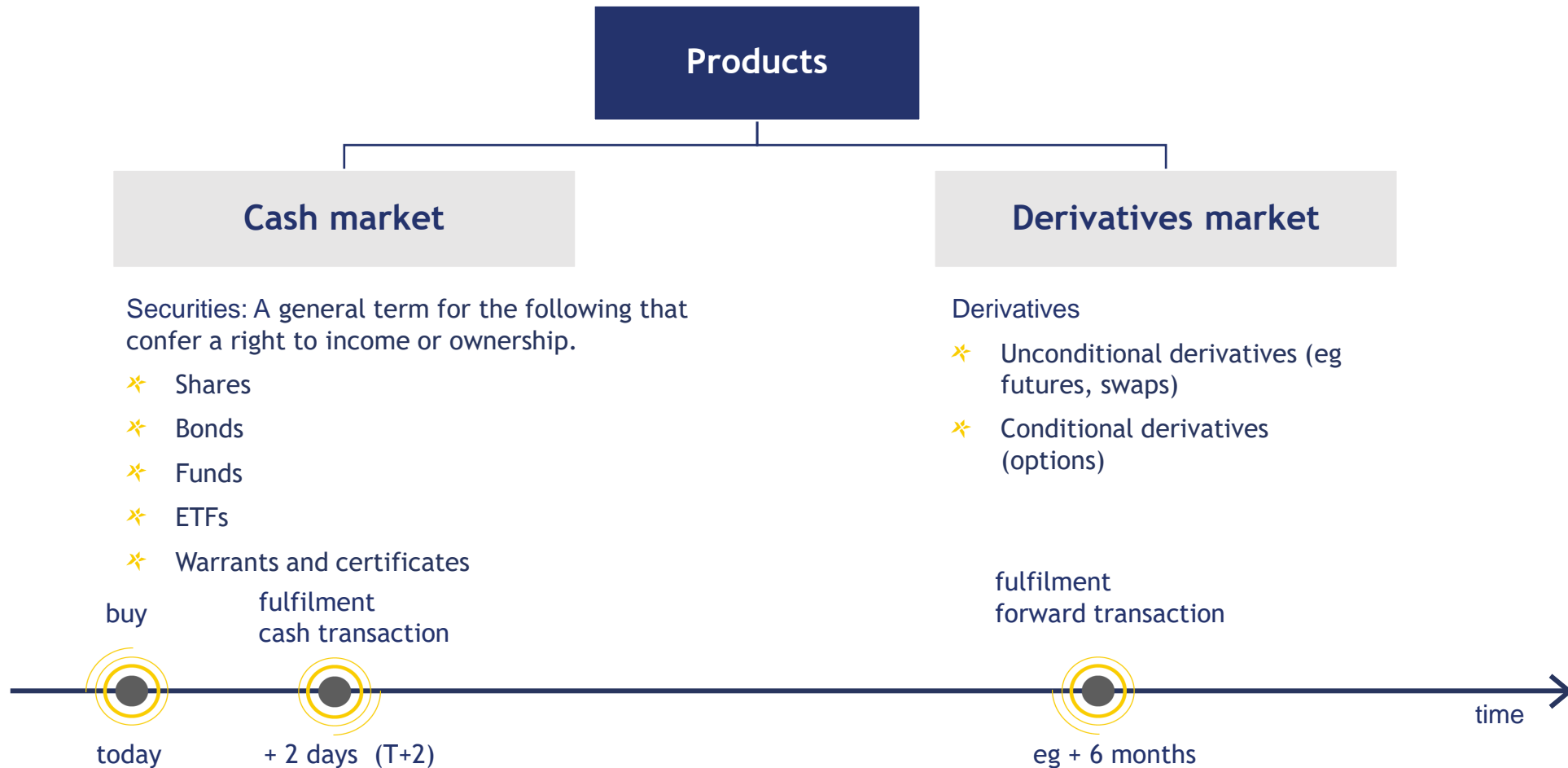


3.

How are derivatives markets regulated in the EU (MiFID II / MiFIR, EMIR, CCP R&R)?

All topics will be addressed from a functional as well as a policy perspective and there will be a focus on EU regulation.

Cash and derivatives market



Cash and derivatives market

Cash market

Securities are tradeable financial assets such as:

Shares

- ✦ Securities giving the investor partial ownership of a company.

Bonds

- ✦ Securities issued by corporations and the public sector to obtain debt capital without giving ownership rights.

Derivatives market

A derivative is a contract that derives its value from the performance of an underlying assets.

Futures

- ✦ Standardised contracts between two parties that undertake to purchase or deliver a specified quantity of an underlying asset at a specified price on a specified date.

Options

- ✦ Standardised contracts between two parties. The buyer of an option acquires -- against payment of the option price (premium) -- the right to buy or sell a specified quantity of a specified financial product at a specified price on a specified date.

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1. Introduction to derivatives
2. Financial futures
3. Financial Options
4. Exchanges
5. The Central Clearing Counterparty (CCP)
6. Regulation - Key challenges for policymakers
7. Q&A

1 Introduction to derivatives

What is a derivative?

Derivative

A financial security with a value that is reliant on, or derived from, an underlying asset or group of assets. The **underlying asset** can be a stock, an index or a commodity.

Derivatives allow the investor to manage the risk associated to an underlying asset with no modification of the position in that asset.

Derivative contract

A future exchange compromise to be executed on a specific date (expiration date or maturity), and in its investment is not necessary the payment of the “principal” (this is named the “leverage effect”). This “leverage effect” means that these derivative products are instruments useful for risk management.

What are the different types of derivatives contracts?

Regulated Markets

Futures

A contract (obligation) to buy or sell an asset or financial instrument at the agreed price at a certain point in the future.

Options

A contract that gives its holder the right, but not the obligation, to buy (call option) or sell (put option) a particular asset or financial instrument at an agreed price ('strike price') at a certain point in the future.

Over the Counter (OTC)

Forwards

Similar but unlike standard futures contracts a forward contract can be customised regarding the underlying asset, amount and delivery date.

Swaps

A contract through which two parties agree to exchange financial instruments on specified dates for a specified period of time. Most common are interest rate swaps and currency swaps.

What are the underlying assets of derivatives products?

Commodities

- ✦ Oil, gas, emissions, and other energy products
- ✦ Coffee, cocoa, sugars (i.e. the 'Softs')
- ✦ Metals and precious metals
- ✦ Agricultural, e.g. grain, wheat, livestock.

Financials

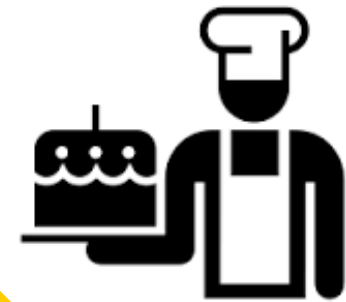
- ✦ Interest rates
- ✦ Bonds
- ✦ Currencies
- ✦ Individual stocks and shares
- ✦ Indices (e.g. CAC, Dow Jones, DAX, IBEX, etc.)

Why trade derivatives?

Derivatives contracts allow participants to manage risk.

Risk management is the process of identifying the desired level of risk while identifying the actual level of risk and purchasing derivatives contracts accordingly.

Hedging is designed to limit exposure to risk in order to conduct everyday business.



The farmer is concerned that wheat prices will go down, and he will not make enough money to cover his costs.

The baker is concerned that wheat prices will go up and he will have to increase prices to cover his costs.

The farmer and baker agree in advance on a price for the wheat, regardless of the market price at harvest time (=HEDGE).

By creating a hedge, both the farmer and the baker have managed the risk of fluctuating wheat prices.

Regardless of which way the price goes, the hedge has protected both against the potential for serious losses.

Everyone can benefit!

Who trades derivatives?

- ✦ Traditional hedgers typically include producers and consumers of commodities or owners of assets subject to influences (such as an interest rate).
- ✦ Hedgers also include businesses with a cross-border element who are exposed to trade and currency exchange fluctuations.
- ✦ Hedgers frequently meet with investors who deliberately take on risk and wish to establish positions in line with their expectations without large upfront capital investment.

Why is hedging useful?

- ✦ Hedging is a counter-position that offsets the cash or commodity market position. Entering into derivatives contracts protects parties from future price swings.
- ✦ Hedging is used to mitigate risk in the underlying asset, by entering into a derivative contract to protect oneself from price swings.

Equities

Part of an investment portfolio includes 100 shares of a car manufacturer. The car industry is cyclical so their shares will probably be worth less if the economy starts to deteriorate.

- Entering into a put option contract will allow the investor to sell the shares at today's set price in the future.
- Entering into a futures contract will oblige the investor to sell the shares at today's set price at a certain point in the future.



Slump

Investor exercises put option (sells at higher price than the market price)

Commodities

An airline wants to be protected from a surge in fuel prices which would significantly increase costs and force it to increase ticket prices charged to customers.

- Entering into a call option contract on oil, will allow the airline to purchase fuel at today's set price in the future.
- Entering into a 'futures' contract on oil, will oblige the airline to purchase fuel at today's price at a certain point in the future.



Surge

Airline exercises call option (buys at lower price than the market price)

Where are derivatives traded?

Derivatives can be traded **on** or **off** exchange

Exchange Traded Derivatives (ETD)
Derivatives that are traded **on** a 'Regulated Market'* (i.e. an exchange) via a multilateral order book open to everyone.



Over the Counter Derivatives (OTC)
Traded bilaterally between entities or **off** exchange, i.e. on a trading venue that is not a regulated market.

Broker to client bilateral trade based on specifications



Exchange Traded Derivative (ETD)

An ETD is mainly a future contract or an option contract whose price is determined in the central **order book** (as any other financial instrument listed in an exchange).

Key benefits of trading ETDs:

- ✦ **Deep pools of liquidity,**
- ✦ **Price transparency,**
- ✦ **Fair and orderly trading environment,**
- ✦ **Elimination of default risk:** ETDs are cleared by a counterparty (CCP) which effectively becomes the seller for every buyer, and the buyer for every seller. This eliminates (or diminishes) the risk that the counterparty to the derivative transaction may default on its obligations, mainly credit risk and legal risk.

Securitised Derivatives

- Are tradable financial instruments designed to meet investors' needs and to respond to different investment strategies related to an underlying asset.
- The underlying asset can be any equity, bond, index, currency, commodity or a basket of any of these.
- Their price does not result from offer and demand but is derived not only from that of the underlying asset but also from several variables like volatility, time to expiry, dividends, interest rates.
- Their features, pricing, trading and post-trade models make Securitised Derivatives not comparable to other instruments (incl. 'normal' derivatives).

Leverage Products

Leverage Products often incorporate an option component to take a leveraged long or short position on the underlying asset; according to their features, they may be distinguished between plain vanilla and structured/exotic leverage products.

Investment Products

Investment Products track the performance of an underlying asset, without leverage but often with bonus or discount features. Some can offer a level of capital protection. They provide the investor the opportunity to spread risk with moderate capital and administration costs, thus making possible the investment in foreign or largely diversified assets.

Main risks associated with derivatives

All economic transactions involve certain risks of different nature. Derivatives are no exception, we can distinguish these different types of risks:

1 Credit risk:

Possibility that the party of one side of the transaction does not fulfil its obligations, provoking losses to the party on the other side of the transaction.

2 Liquidity Risk

Impossibility of undoing a position with enough rapidity and at a competitive market price. It is a relatively uneasy risk to measure.

3 Operational Risk

Risk associated to the implementation of transactions (technical issues, complexity of products, suitable financial training...).

4 Legal Risk

This risk has to do with the lack of regulation, or regulation “gaps” (mainly associated to OTC derivatives) related to financial innovation, but also due to the lack of rigor when analysing the possible legal limitations of the different parties of the transaction.

5 Market Risk

Possibility for a position or for a portfolio to reach losses when unfavourable market prices exist. Different types of market risk can be identified:

- exchange rates
- interest rates
- stocks
- volatility

.....

Volatility and its measure

Volatility is a measure of the **degree of price fluctuation** of a financial asset -
a measure of **market risk**

- ✦ Volatility is a statistical measure of the dispersion of returns for a given security or market index.
- ✦ In most cases, the higher the volatility, the riskier the security.
- ✦ Volatility can either be measured by using the standard deviation or variance between returns from that same security or market index.

Volatility is a key aspect for asset pricing

- ✦ Higher volatility leads to higher risk premia.
- ✦ Volatility in a portfolio construction is narrowly linked to the degree of risk-aversion.

The concept of volatility and its measure

Time periods	Return asset A	Return asset B
1	11.50%	7.00%
2	11.20%	9.00%
3	11.00%	11.00%
4	10.30%	13.00%
5	11.00%	15.00%
Average:	11.00%	11.00%
Standard Deviation:	0.441588%	3.162278%

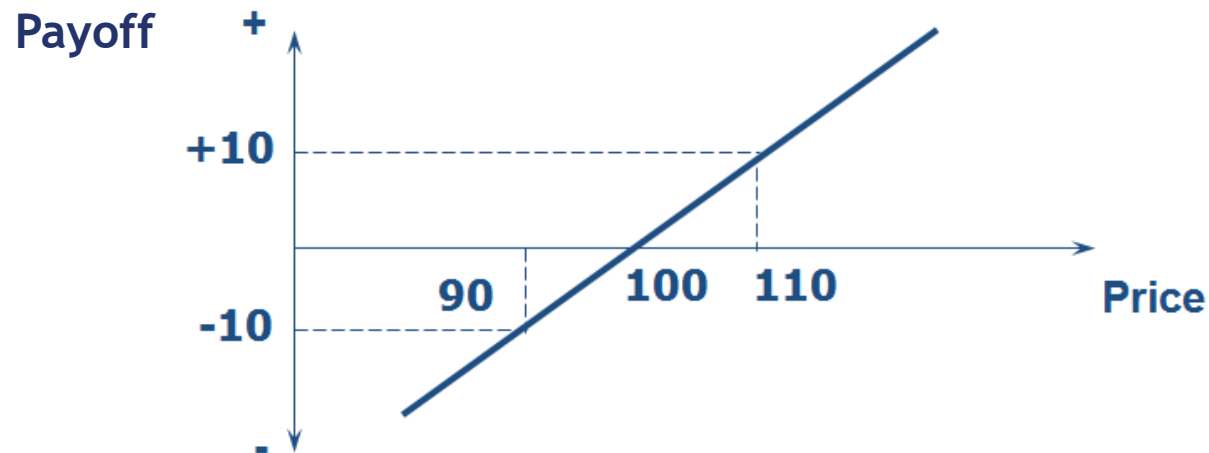
Standard deviation is a measure of the volatility of a stock or of the volatility of a portfolio.

2 Financial futures

Futures Contract

A contract (obligation) to buy or sell an asset or financial instrument at the agreed price at a certain point in the future.

A futures contract, for the BUYER, means the obligation to buy the underlying asset at the price of the Futures Contract at the Expiration Date:

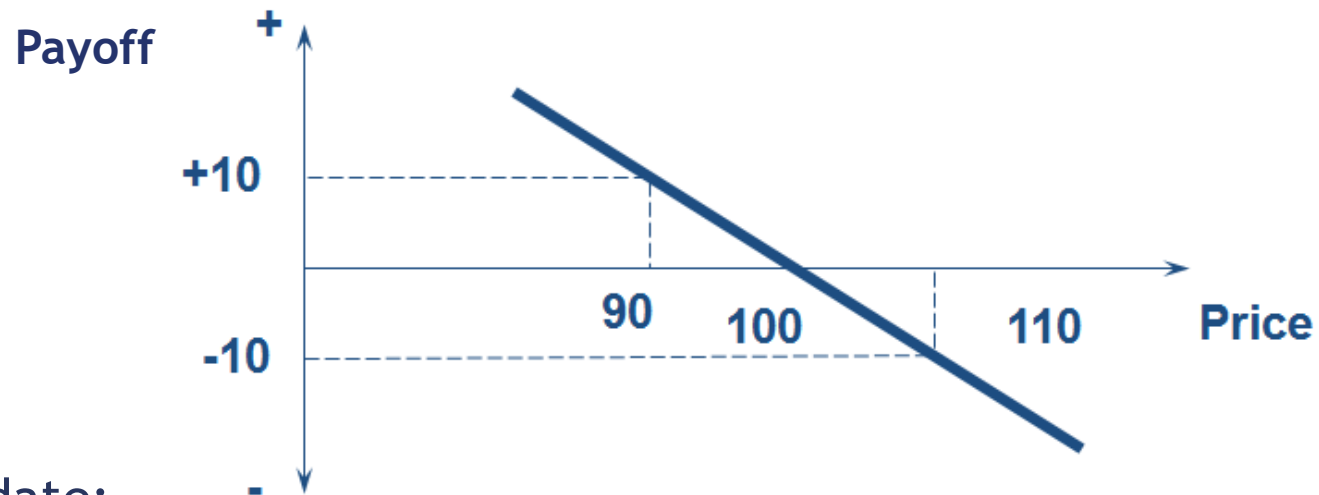


If, at the expiration date:

- Price of the Futures contract < Settlement price → Positive payoff
- Price of the Futures contract > Settlement price → Negative payoff

Futures Contract

A futures contract, for the SELLER, means the obligation to sell the underlying asset at the price of the Futures Contract at the Expiration Date:



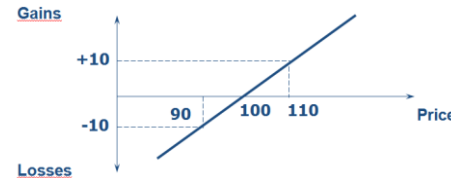
If, at the expiration date:

Price of the Futures contract > Settlement price → Positive payoff
Price of the Futures contract < Settlement price → Negative payoff

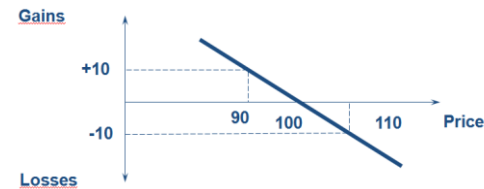
Main positions of a futures contract - open position

An open position can have two possibilities:

✦ It can be bought as a long position.



✦ It can be sold as a short position.

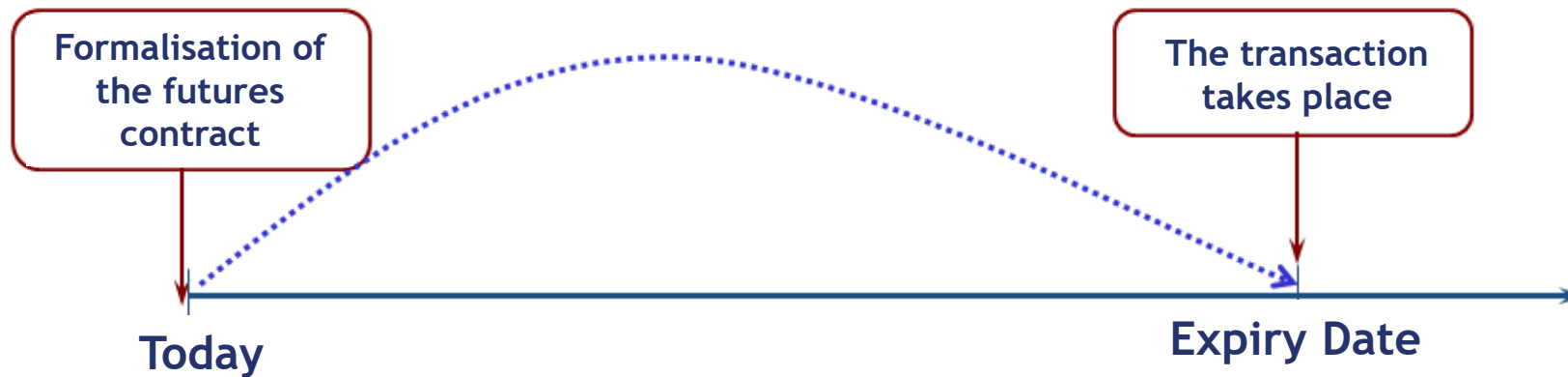


To close the position before the expiration date, the opposing position must be implemented:

- If you have a long position, it must be sold in order to close the position.
- If you have a short position, it must be bought in order to close the position.

Theoretical price of a financial futures contract and its practical implications

Which theoretical price (fair price for both parties of the transaction) should a futures contract have today if it expires in T days?



SPOT PRICE + NET FINANCING COST

Theoretical price of a financial futures contract and its practical implications

Which theoretical price (fair price for both parties of the transaction) should have today a futures contract if this futures contract expires in T days?

$$F = S (1+ti) - d (1+ t' i')$$

F: Price of the futures contract.

S: Spot price of the stock.

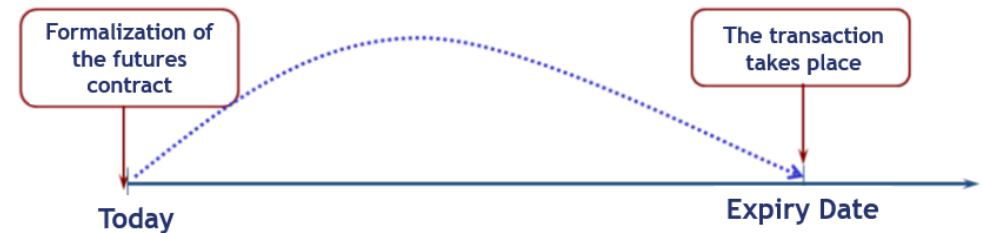
i: Interest rate (risk-free rate).

t: Time to expiry date.

d: Dividends paid before expiry date.

i': Interest rate (risk-free rate) for the period being since the dividend payment until the expiration date.

t': Time since the dividend payment until the expiration date of the futures contract.



SPOT PRICE + NET FINANCING COST

Theoretical price of a financial futures contract and its practical implications

$$F = S (1+ti) - d (1+ t' i')$$

The previous formula means that the theoretical price of a futures contract can be higher or lower with respect to the spot price, mainly depending on the interest rate and, also, depending on the possible payment of dividends.

- ✓ If the futures contract price is **above** the spot price ($F > S$), this situation is named *contango*.
- ✓ If the futures contract price is **below** the spot price ($F < S$), this situation is named *backwardation*.

Possible arbitrage strategies can arise if, under certain circumstances, any of the previous schemes occurs.

3 Financial options



Options

A contract that gives its holder the right to buy (call option) or sell (put option) a particular asset or financial instrument at an agreed price ('strike price') at a certain point in the future.

- ✦ The option contract is a forward economic transaction which tries to have a higher degree of flexibility, which means several differences with respect to a futures contract.
- ✦ When the agreement is formalised, the party of one side of the transaction (buyer) pays an amount to the party of the other side of the transaction (seller).
- ✦ When the expiration date arrives, there are no obligations for both parties of the transaction, but only for one (the seller). The party who paid some money (the price of the option), has decision capacity.

Financial options

There are two types of financial options:

Call Option

Which gives the holder the right to **buy** the underlying asset by a certain date to a certain price.

Put option

Which gives the holder the right to **sell** the underlying asset by a certain date to a certain price.

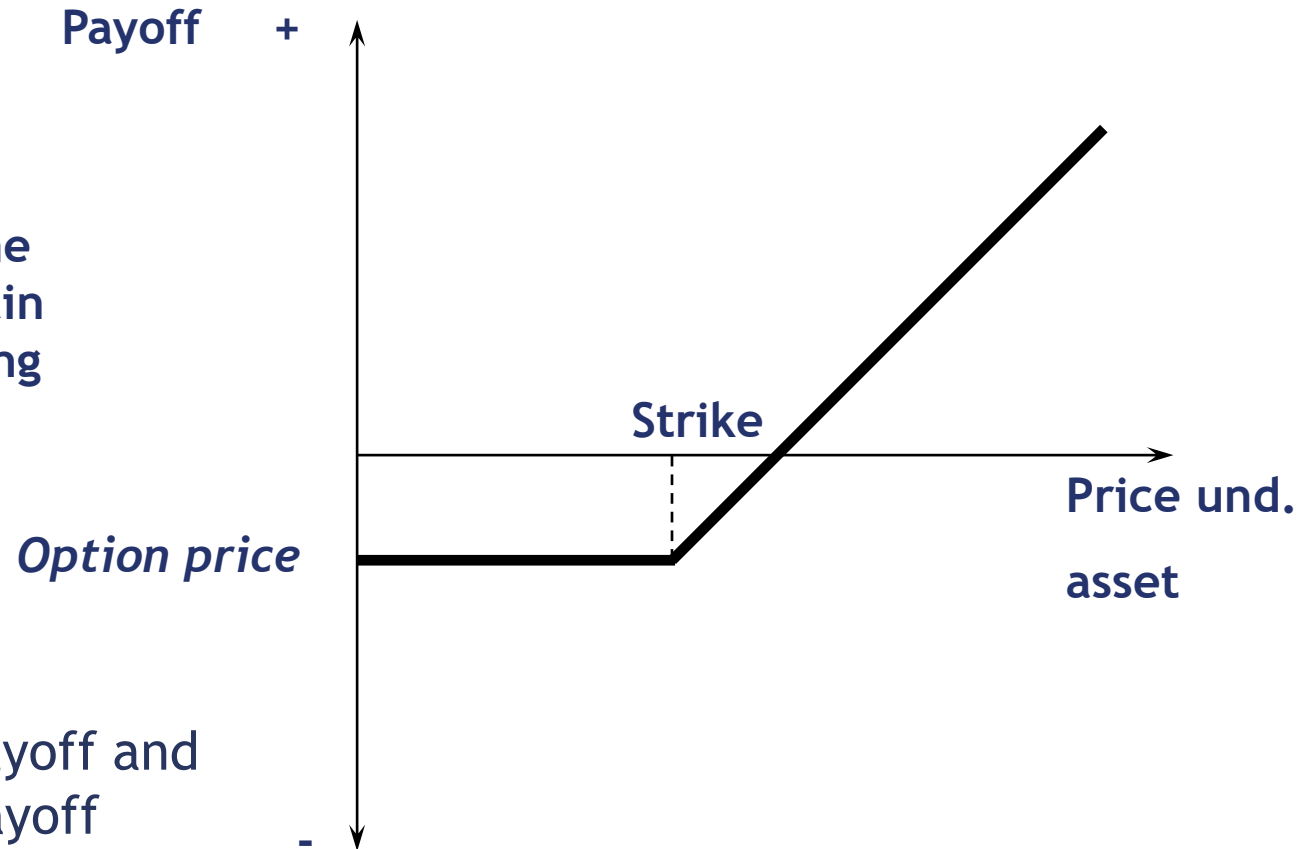
The price at which the holder has the right to buy (call option) or to sell (put option) is named *strike price*.

The date in the contract is known as the *expiration date* or *maturity*.

- ✓ **American options** can be exercised at any time up to the expiration date.
- ✓ **European options** can be exercised only on the expiration date itself.

A call option - for the buyer

The right to buy the underlying asset at the strike price in a certain date (previously paying the option price).

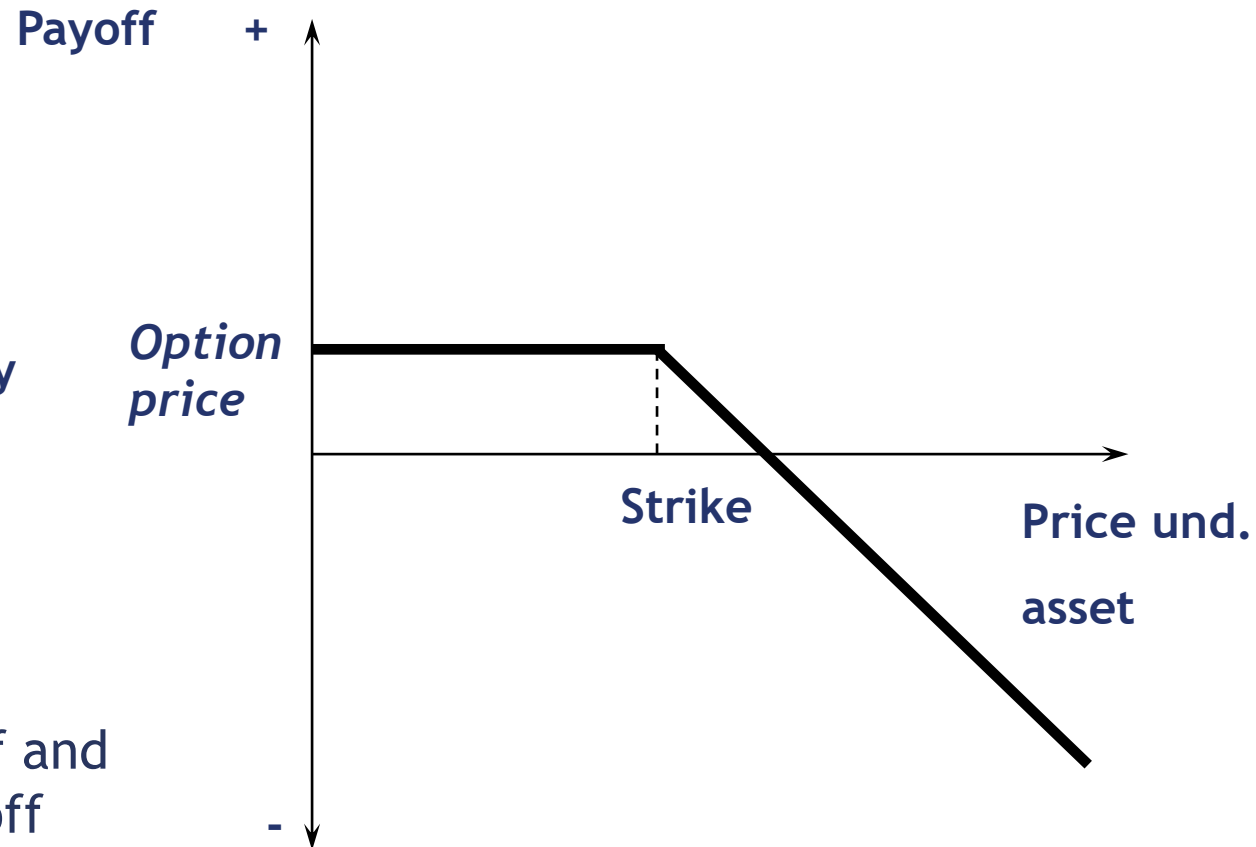


Limited negative payoff and illimited positive payoff

A call option - for the seller

The obligation to sell the underlying asset at the strike price in a certain date (previously receiving the option price).

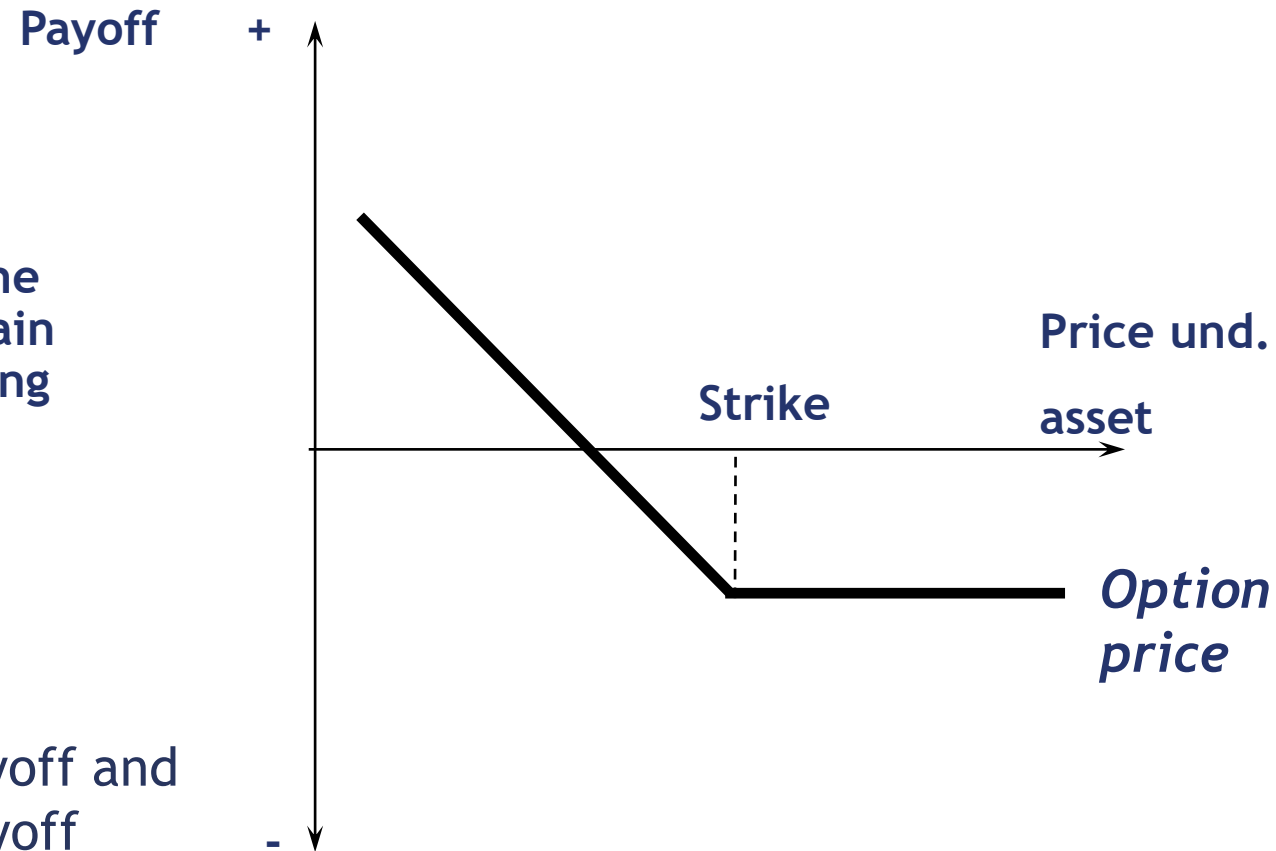
Limited positive payoff and illimited negative payoff



A put option for the buyer

The right to sell the underlying asset at the strike price at a certain date (previously paying the option price).

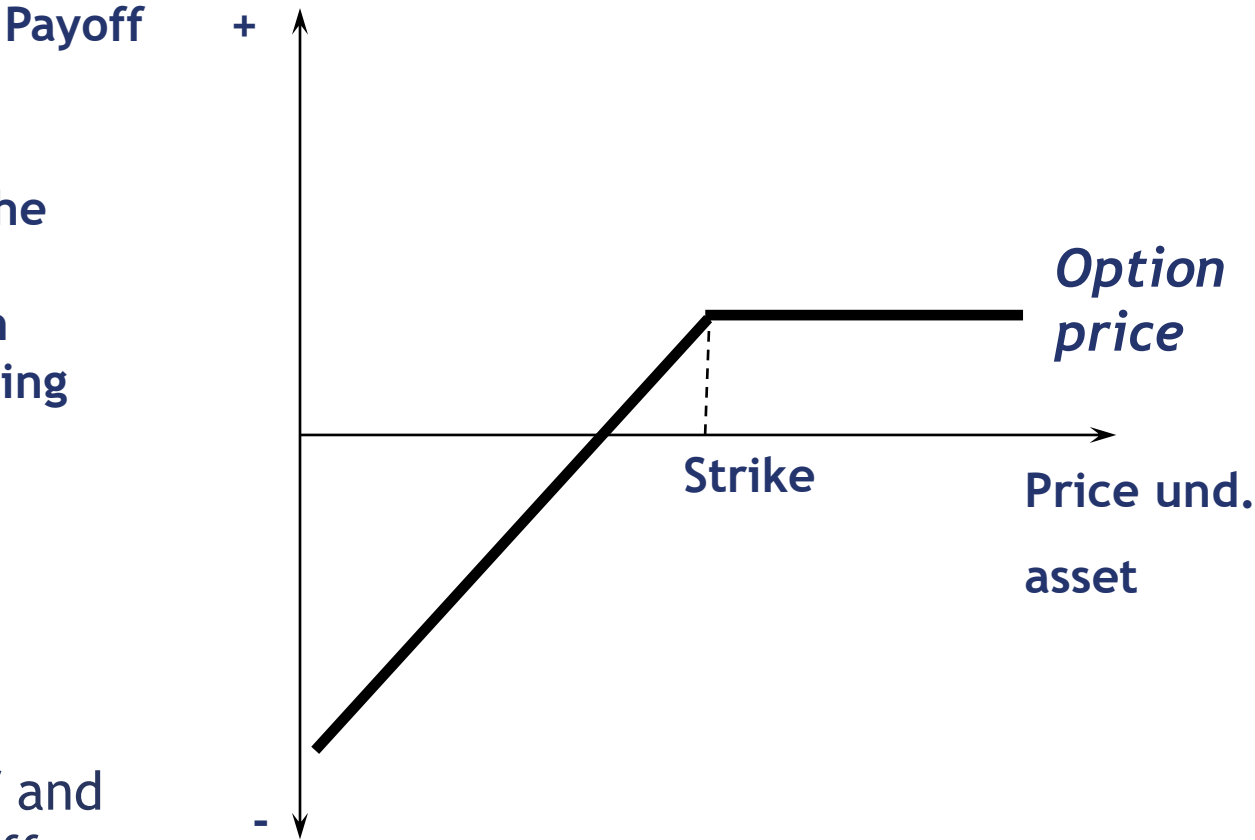
Limited negative payoff and illimited positive payoff



A put option for the seller

The obligation to buy the underlying asset at the strike price in a certain date (previously receiving the option price).

Limited positive payoff and illimited negative payoff



Key variables influencing the option price

Recap:

The buyer (holder of the option) pays the option price and she/he has decision capacity.

However, the seller receives the option price and she/he has obligations.

There are a number of variables influencing the option price, mainly:

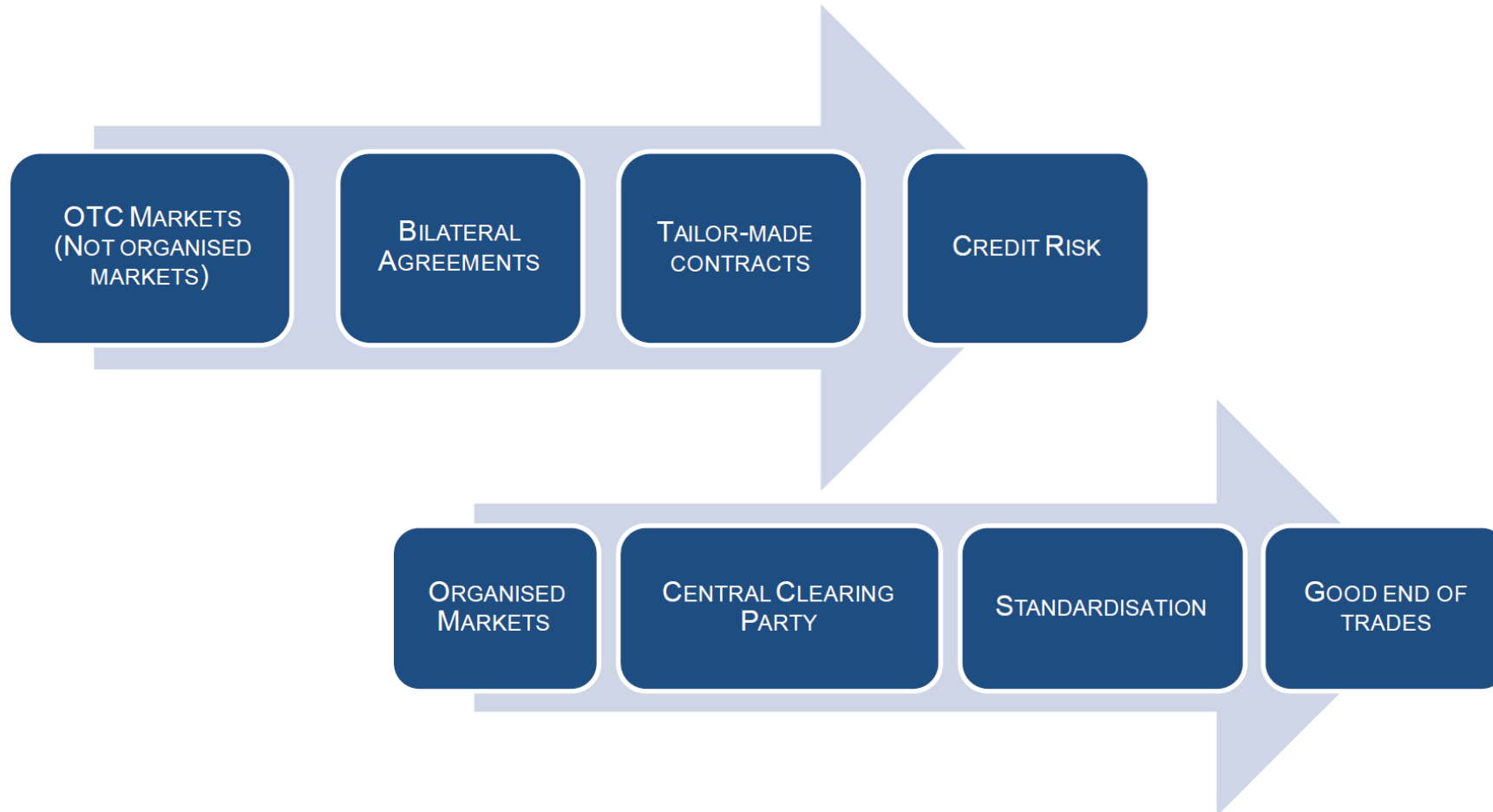


4 Exchanges



Exchanges vs. OTC Markets

There are two broad types of derivatives markets:



Exchanges

A **Regulated Derivatives Market** (whose main traded products (ETD) are futures contracts and options contracts) has the following **key tasks**:

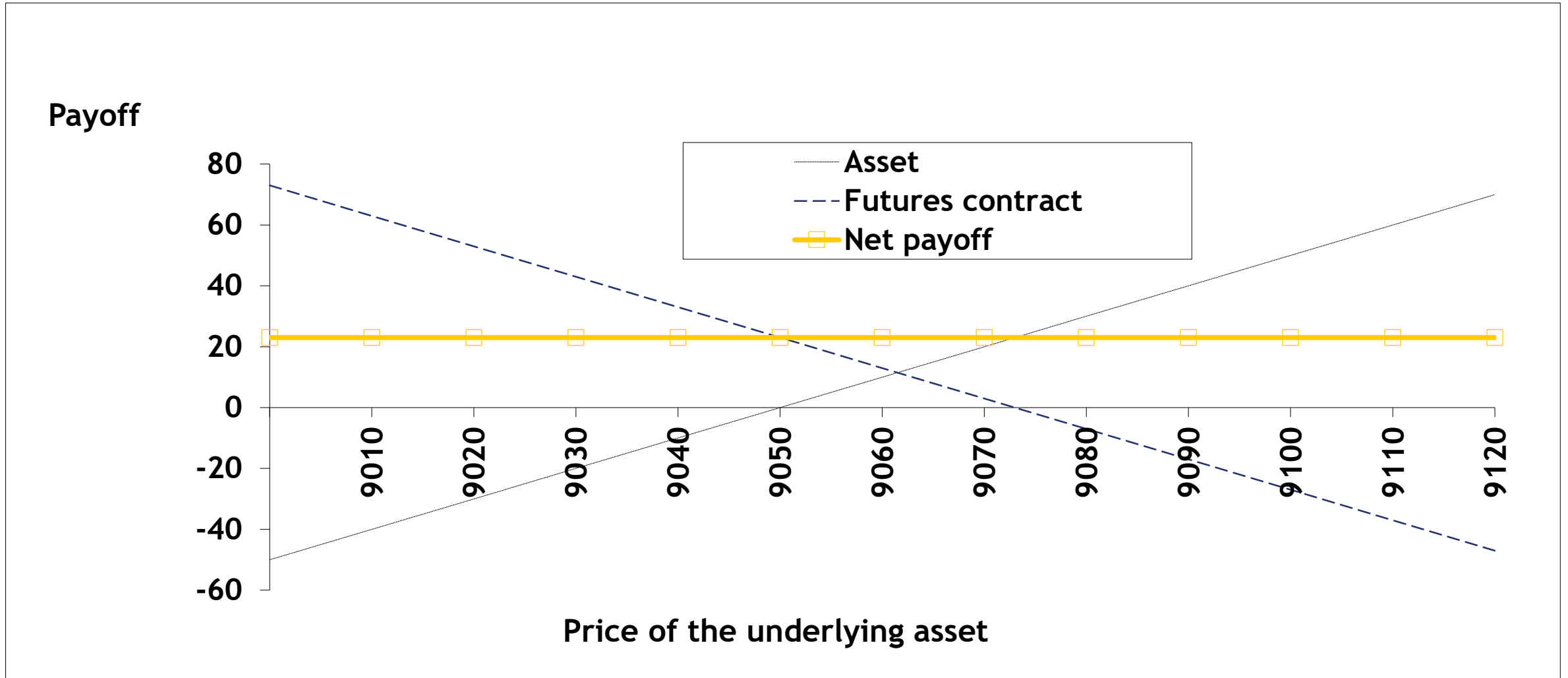
- ✦ It defines the main characteristics and specificities of the contracts.
- ✦ It facilitates trading.
- ✦ It disseminates real-time information of prices, volumes, open interest and market depth.
- ✦ It orderly organises the market.
- ✦ It provides management and surveillance of the market and its listed products.
- ✦ It celebrates agreements with the Central Clearing Counterparty (in charge of aiming the good end of transactions).

Exchanges

An **Exchange** has the following **types of different players**:

- ✦ **Speculators:** Participants that wish to take a position in the market in accordance with the expectations of the evolution in the price of the underlying asset.
- ✦ **Hedgers:** Participants that want to avoid exposure to adverse price movements in the price of the underlying asset.
- ✦ **Arbitrageurs:** Participants that want to lock in a riskless profit by simultaneously entering into transactions in two or more markets. In some markets, and for some participants, it is quite difficult to implement

Hedging with a futures contract



An example of hedging with a futures contract:

If a participant holds a long position in cash of 10 IBEX 35® baskets at 10.000 points, and a hedging position is tried to be implemented selling 10 future contracts at 10.010 points:

A) *What is the net final payoff?*

$$(10.010 - 10.000) * 10 \text{ contracts} * 10 \text{ euros} = +1.000 \text{ €}$$

B) *What expectations about the price of the underlying asset has the final total position?*

Indifferent

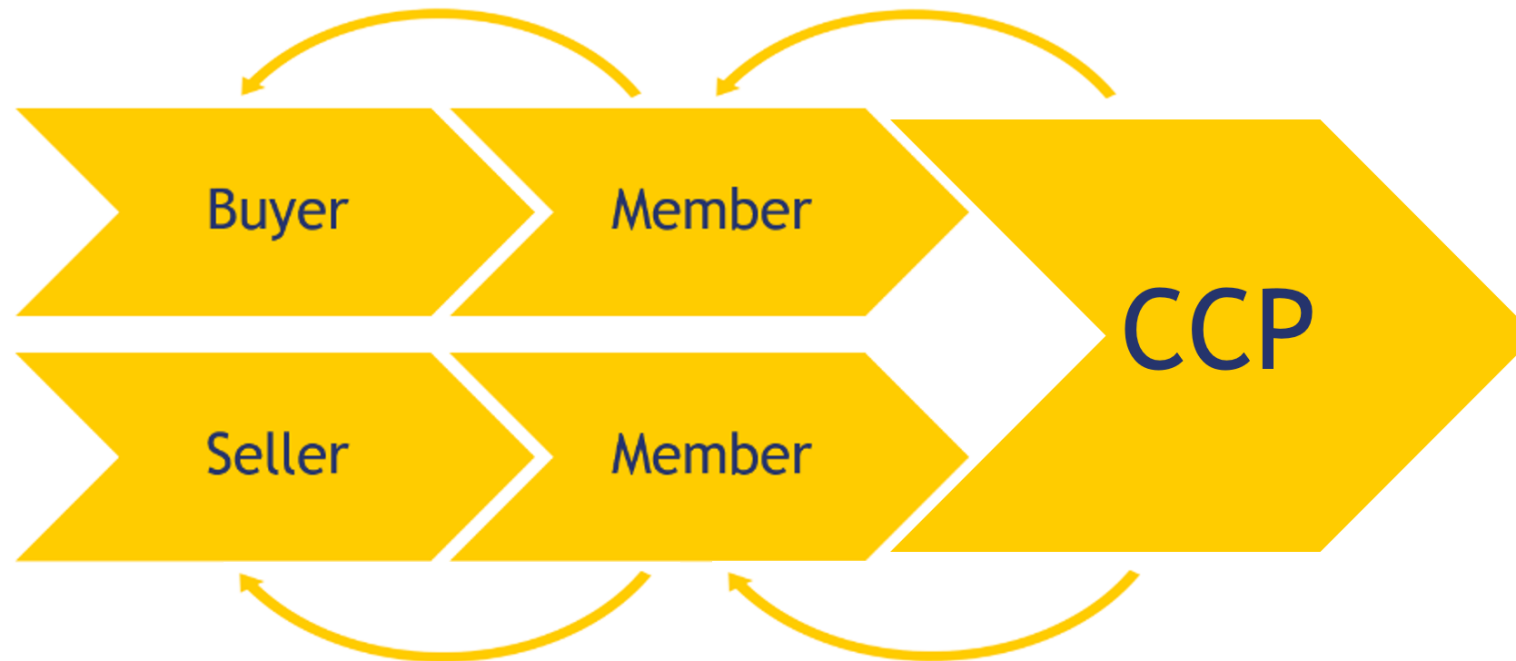
C) *What would be the final total payoff if the price of the underlying asset is:*

PRICE OF UNDERLYING ASSET	CASH	FUTURES CONTRACT	TOTAL PAYOFF
9.880	-12.000	+13.000	+1.000
10.000	0	+1.000	+1.000
10.120	+12.000	-11.000	+1.000

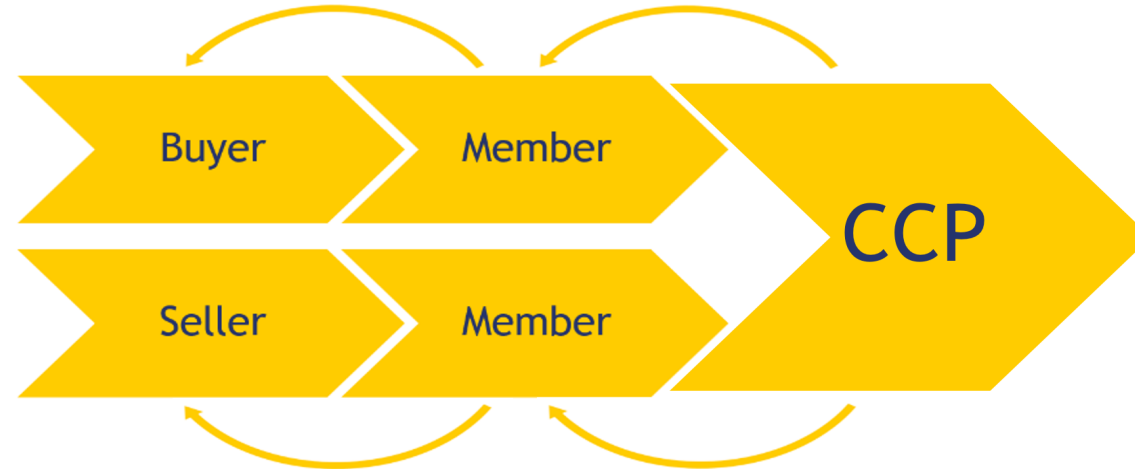
5 Central Clearing Counterparty (CCP)

Main functions of a Central Clearing Counterparty (CCP)

The Central Clearing Counterparty (CCP), in an Organised Derivatives Market, guarantees the performance of the parties to each transaction.



Main functions of a Central Clearing Counterparty (CCP)



The **Credit Risk** is automatically moved to the CCP, and the mechanisms used to avoid a failure of a contract are the following:

- ✓ Restricted access to the member status
- ✓ Variation margin
- ✓ Margin requirements
- ✓ Operative limits and daily stress-tests

Main functions of a Central Clearing Counterparty (CCP)

The CCP has a number of members, who must post funds with the CCP.

The main task of the CCP is to keep track of all the transactions that take place during a trading day, so that it can calculate the net position of each of its members.

In order to achieve its goal, one of the tools of the CCP consists of daily implementation of the **variation margin**, the procedure by which (at the end of each trading session) the CCP proceeds to subtract and pay the losses/profits obtained by all market participants.

Therefore, **each position is valued at market prices on a daily basis.**

Example: when trading with financial futures

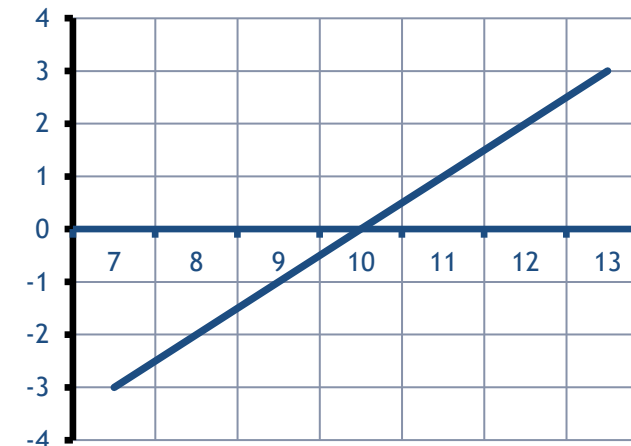
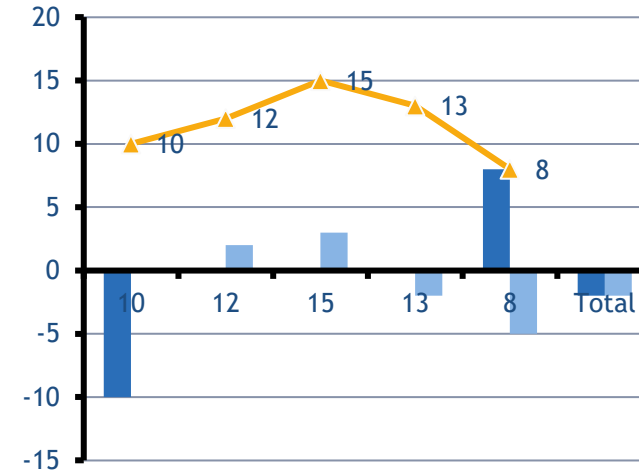
As an introductory example, let us imagine a situation where a buyer and a seller agrees to exchange an asset within 2 days at a price of 100 €:

		VARIATION MARGIN	
DAY	ASSET PRICE	BUYER	SELLER
0	97	-3	+3
1	103	+6	-6
2	105	+2	-2
TOTAL VARIATION MARGIN:		+5	-5

Example: when trading with financial futures

Practical example about the functioning of the CCP when trading with financial futures

PRICE OF THE ASSET	CASH FLOWS	
	BUY A STOCK	BUY A FUTURE
10	-10	
12		2
15		3
13		-2
8	8	-5
NET RESULT	-2	-2



Collateral, Margining and Default Management of the CCP

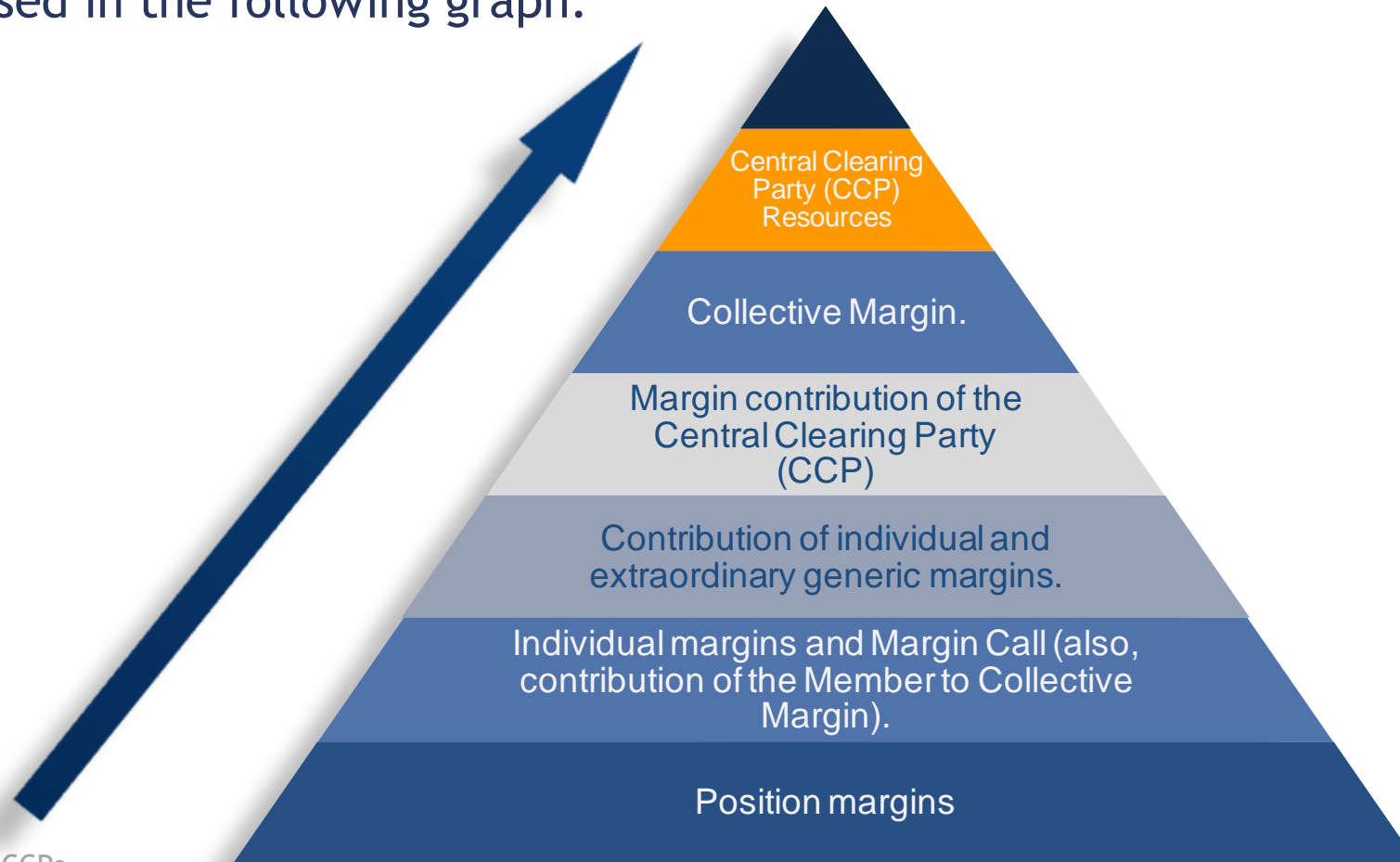
The **clearing margins** are the amounts required to members and clients (according to the specific regulation of the CCP, and its correspondent development rules) in order to cover the specific failures of the obligations acquired by these members and clients.

The above also means that **certain financial assets** (and not only cash) can be used as collateral (certain stocks, fixed income products, etc) according to the specific regulation of the CCP.

It is also important to point out that **different categories or types of margins** (with different objectives) can be considered in the global structure of risk management of the CCP (position margin, initial margin, margin call, collective margin, etc.).

Collateral, Margining and Default Management of the CCP

An example of the structure of Default Management of a Central Clearing Counterparty (CCP) can be compressed in the following graph:





6 Regulation - Key challenges for policymakers

Regulatory Overview: MiFID II, MiFIR, EMIR, CCP R&R

Derivatives is one of the main areas that have experimented regulatory reforms after the financial crisis, which clearly showed the systemic risks of OTC derivatives (as opposed to trading on exchanges), given the low levels of transparency and insufficient control tools.

The reforms introduced by **MiFID II /MiFIR*** in derivatives can be summarised as follows:

- ✦ More pre-trade and post-trade transparency, both in prices and about the information of the traded contracts;
- ✦ Trading of products in organised markets;
- ✦ Enhancement of the liquidity through more strict mechanisms and flexible incentives to market makers”.

*Markets in Financial Instruments Directive and Regulation (MiFID/R)

Regulatory Overview: MiFID II, MiFIR, EMIR, CCP R&R

The main implications of **MiFID II / MiFIR** in derivatives can be summarised as follows:

- ✦ More control about the functioning and the good governance of all trading venues, being Regulated Markets, Multilateral Trading Facilities or Organised Trading Systems: a better system of trading communications to the European regulator (ESMA) which improves the identification of each contract and each trade;
- ✦ A new system of keeping the information about the orders available for its checking, known as Order Record Keeping (ORK).

Regulatory Overview: MiFID II, MiFIR, EMIR, CCP R&R

Following the G20 commitments to increase transparency for OTC derivatives (agreed in Pittsburgh in September 2009), in 2012 the EU adopted the **European Market Infrastructure Regulation (EMIR)** aiming to:

- ✦ Increase transparency in the OTC derivatives markets;
- ✦ Mitigate credit risk;
- ✦ Reduce operational risk.

EMIR includes the obligation to centrally clear certain classes of OTC derivatives (currently, Interest Rate Swaps and Credit Default Swaps).

For non-centrally cleared OTC derivative contracts, EMIR establishes risk mitigation techniques.

EMIR identifies two categories of counterparties to whom the clearing obligation applies depending on the size of their positions: Financial counterparties (FC) and Non-Financial counterparties (NFC).

Regulatory Overview: MiFID II, MiFIR, EMIR, CCP R&R

EMIR REFIT

- ✦ Following a review of EMIR in 2015 and 2016, the Commission proposed a first set of amendments to EMIR in May 2017 known as the EMIR REFIT. The majority of provisions within the EMIR Refit Regulation entered into force on 17 June 2019.

EMIR 2.2

- ✦ In June 2017, the Commission proposed a second set of amendments to EMIR, known as EMIR 2.2, designed to enhance the supervision of third country CCPs (TC CCPs) and make the supervision of EU CCPs more coherent (taking particular account of the effects of Brexit).
- ✦ EMIR 2.2 introduces a set of criteria to be considered by ESMA to determine whether a TC CCP is systemically important or likely to become systemically important for the financial stability of the EU or of one of its Member States. Depending on this, the CCP might face additional requirements in order to be recognised and will be subject to enhanced EU supervision.
- ✦ The regulation was published in the Official Journal on 12th December and will enter into force 20 days later (1st January 2020). Level II work is still ongoing.

Regulatory Overview: MiFID II, MiFIR, EMIR, CCP R&R

CCP Recovery & Resolution

- ✦ Recovery and Resolution for CCPs is the next legislative step in implementing the G20 objectives.
- ✦ It will complement the high standards implemented through EMIR and confirm the CCPs' role as a neutral risk manager for financial markets.
- ✦ The EU Commission has published the first legislative proposal in November 2016. Work on the CCP R&R file was suspended until an agreement on supervision in EMIR 2.2 was reached (March 2019). Following such agreement, the European Parliament completed its first reading and the Council resumed its work under the Romanian and ongoing Finnish Presidency.
- ✦ The objective of Recovery and Resolution for CCPs is to define measures to be taken in extreme but plausible events of financial distress. The key objective is to exclude the use of public resources and increase the stability of financial markets.



■ Thank you!



 Q&A



Annex

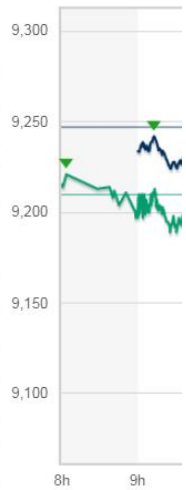
DERIVATIVES & CCPs

Theoretical price of a financial futures contract and its practical implications

Eurex Exchange > Products > Equity index derivatives

Financial Derivatives Commodities Derivatives xRo

FUTURE	EXPIRATION	LAST
IBEX 35®	21-06-2019	9,147.00
Minibex 35	21-06-2019	9,150.00
Microlbex 35	21-06-2019	-
IBEX 35 BANCOS	21-06-2019	-
IBEX 35 ENERGÍA	21-06-2019	-
BBVA	21-06-2019	4.87
BME	21-06-2019	-
Iberdrola	21-06-2019	8.93
Inditex	21-06-2019	24.97
Repsol	21-06-2019	13.82
Telefonica	21-06-2019	7.27
B. Santander	21-06-2019	3.96



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Market —

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- Euronext Derivatives Markets

Market Status

Euronext Market Status is a free email and RSS subscription service that disseminates near-real-time alerts to notify market participants of any degradation and/or interruption of service on Euronext's Cash and Derivatives Markets.

16:43:51 CET 16 May 2019

ALL SYSTEMS NORMAL +

EN FR NL PT

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DERIVATIVES & CCPs

Theoretical price of a financial futures contract and its practical implications

FUTURES ON IBEX 35®

A kind of futures contract:



Financial Derivatives



UNDERLYING ASSET	IBEX 35 Index.
INDEX DESCRIPTION	The IBEX 35 Index is a capitalization-weighted index comprising the 35 most liquid Spanish stocks traded in the Continuous Market.
MULTIPLIER	10 Euros. The IBEX 35 Index must be multiplied by 10 Euros in order to obtain the contract size. Therefore each index point is worth 10 Euros.
CONTRACT SIZE	The IBEX 35 Index times the Multiplier. The nominal value of the contract will be obtained by multiplying the price of the IBEX 35 Future times the multiplier. Therefore an IBEX 35® Future contract at a price of 10.000 points would have a nominal value of: 10.000 x 10 = 100.000 Euros.
PRICE QUOTATION	In whole Index points with a minimum fluctuation set according to the quotation of the underlying asset and/or the Market practice, which will be established by Circular. The minimum fluctuation might be different in pre-arranged trades between Members.
MAXIMUM PRICE FLUCTUTATION	None.
EXPIRATIONS	Expirations available for trading, clearing and settlement will be the following: <ul style="list-style-type: none"> - The ten nearest quarterly expiries of the March-June-September-December cycle. - The two nearest calendar months apart from the first expiry of the quarterly cycle. - The expiries of the June-December cycle, not included in the above criteria, to complete expiries with a maximum life of 5 years.
EXPIRATION DATE	The third Friday of the expiration month.
LAST TRADING DAY	The Expiration Date.
DAILY SETTLEMENT PRICE	Daily Settlement Price for the front expiration is obtained by the volume weighted average of trades executed in the order book between 17:29 and 17:30 CET with one decimal.

Source: www.meff.com

DERIVATIVES & CCPs

Theoretical price of a financial futures contract and its practical implications

A kind of futures contract:



DAX® Futures (FDAX)

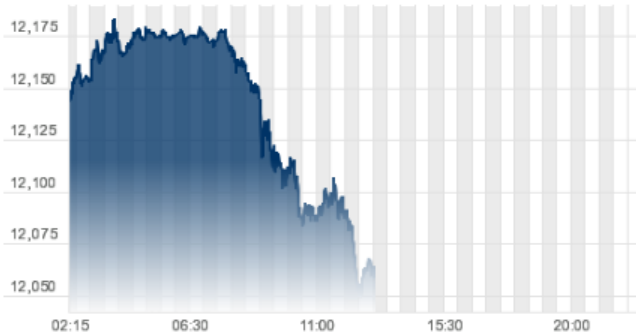
Product ISIN DE0008469594 Currency EUR
 Underlying ISIN DE0008469008

Latest | Trading | Parameters | Orderbook

Prices/Quotes

Displayed data is 15 minutes delayed. Last trade: Jun 14, 2019 12:45:10 PM

Intraday



Orderbook

Expiry Jun 2019
 Orderbook

Jun 2019

Opening price	High	Low	Bid price	Bid vol	Ask price	Ask vol	Diff. to prev. day last	Last price	Date	Time	Di settle pr
12,142.50	12,185.00	12,047.50	12,062.50	6	12,063.50	6	-0.96%	12,063.00	06/14/2019	12:45:10	12,164

Source: www.eurexchange.com



DERIVATIVES & CCPs

Theoretical price of a financial futures contract and its practical implications

A kind of futures contract:



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CAC40 INDEX FUTURE

[Delayed Prices](#) | [Specification](#) | [Settlement Prices](#) | [Notices](#) | [Publication](#)

CAC 40® INDEX FUTURE

Unit of trading	10
Delivery day	First business day after the Last Trading Day
Delivery months	3 monthly, 3 quarterly (from March, June, September, December), 8 half-yearly maturities from the June/December cycle ¹
Quotation	Index points (e.g. 4,100.0)
Minimum price movement (tick size and value)	Central Order Book 0.5 index points (€5 per contract), Basis Trade & Large-in-Scale Facility: 0.1 index points (€1 per contract)
Last trading day	Trading ceases at 16:00 CET on the third Friday of the delivery month. In the event that the third Friday is not a business day, the Last Trading Day shall normally be the last business day preceding the third Friday

More on Equity Index Derivatives

[Equity Index Derivatives Overview](#)
[Contract List](#)

Derivatives Statistics

[Daily derivatives statistics reports](#)

Contract Info

SNAPSHOT

Name	CAC40 INDEX FUTURE	
Trading Code	FCE	
Market	Euronext Paris	
Product Type	Index Future	
Currency	EUR	
Activity	14 Jun 2019 13:07 CET	
Volume	34,283	14 Jun 2019
Open Interest	458,153	13 Jun 2019

Source: www.derivatives.euronext.com

DERIVATIVES & CCPs

Key variables influencing the option price

		CALL	PUT
Strike price	↑	-	+
	↓	+	-
Price of underlying asset	↑	+	-
	↓	-	+
Time to maturity	↑	+	+
	↓	-	-
Volatility	↑	+	+
	↓	-	-
Interest rates	↑	+	-
	↓	-	+
Dividends	↑	-	+
	↓	+	-

DERIVATIVES & CCPs

Key variables influencing the option price

OPTIONS ON IBEX 35®

A kind of option:



UNDERLYING ASSET	One IBEX 35 mini Futures Contract of the same expiration.
CONTRACT SIZE	The mini IBEX 35 Future multiplied by 1 Euro.
STYLE OF OPTION	European (can only be exercised on the Exercise Date).
TYPES OF OPTION	Call and Put
EXPIRATIONS	Expirations available for trading, clearing and settlement will be the following: <ul style="list-style-type: none"> • The four nearest weekly maturities including the third week of the month. • The two nearest calendar months apart from the first expiry of the quarterly cycle. • The ten nearest quarterly expiries of the March-June-September-December cycle. • The expiries of the June-December cycle, not included in the above criteria, to complete expiries with a maximum life of 5 years.
EXPIRATION DATE	Third Friday of the month of maturity or the Friday of the weekly expiration.
EXERCISE DATE	The Expiration Date.
CONTRACT SETTLEMENT DATE	First Business Day following the Expiration Date.
EXERCISE	Automatic for all Contracts which yield profits to their holders.
LAST TRADING DATE	The Expiration Date.
EXERCISE PRICES	In whole IBEX 35 mini Futures points. For contracts with a time to expiration of above 2 months, Exercise Prices shall end in 100 exactly; for contracts with a time to expiration of below two months, Exercise Prices shall be exact multiples of 50.
PREMIUM QUOTATION	In whole IBEX 35 mini Futures points with a minimum fluctuation set according to the quotation of the underlying asset and/or the Market practice, which will be established by Circular. The minimum fluctuation shall be different in pre-arranged trades between Members.

Source: www.meff.com

DERIVATIVES & CCPs

Key variables influencing the option price

A kind of option:



DAX® Options (ODAX)

Product ISIN DE0008469495 Currency EUR
 Underlying ISIN DE0008469008

Latest | Trading | Parameters

Prices/Quotes

Call Put Jun 2019

Displayed data is 15 minutes delayed. Last trade: Jun 14, 2019 1:14:51 PM

Strike price	Vers. num.	Opening price	High	Low	Bid price	Bid vol	Ask price	Ask vol	Diff. to prev. day last	Last price	Date
20,000.00	0	n.a.	n.a.	n.a.	n.a.	n.a.	0.20	59	+0.00%	0.10	06/13/2019
19,500.00	0	n.a.	n.a.	n.a.	n.a.	n.a.	0.50	150	+0.00%	0.10	06/13/2019
19,000.00	0	n.a.	n.a.	n.a.	n.a.	n.a.	0.20	45	+0.00%	0.10	06/13/2019
18,500.00	0	n.a.	n.a.	n.a.	n.a.	n.a.	0.50	150	+0.00%	0.10	06/13/2019
18,000.00	0	n.a.	n.a.	n.a.	n.a.	n.a.	0.50	150	+0.00%	0.10	06/13/2019
17,500.00	0	n.a.	n.a.	n.a.	n.a.	n.a.	0.50	150	+0.00%	0.10	06/13/2019
17,000.00	0	n.a.	n.a.	n.a.	n.a.	n.a.	0.50	150	+0.00%	0.10	06/13/2019
16,500.00	0	n.a.	n.a.	n.a.	n.a.	n.a.	0.50	150	+0.00%	0.10	06/13/2019
16,000.00	0	n.a.	n.a.	n.a.	n.a.	n.a.	0.50	150	+0.00%	0.10	06/13/2019
15,500.00	0	n.a.	n.a.	n.a.	n.a.	n.a.	0.50	150	+0.00%	0.10	06/13/2019
15,000.00	0	n.a.	n.a.	n.a.	n.a.	n.a.	0.50	150	+0.00%	0.10	06/13/2019
14,900.00	0	n.a.	n.a.	n.a.	n.a.	n.a.	0.50	150	+0.00%	0.10	06/13/2019

Source: www.eurexchange.com



DERIVATIVES & CCPs

Key variables influencing the option price

A kind of option:

The screenshot shows the Euronext website interface. At the top left is the Euronext logo. On the right, there are language options (EN, FR, NL, PT), a search bar, and radio buttons for 'Search Site' and 'Get Quote'. A teal navigation bar contains links for 'Raising Capital', 'Trading & Products', 'Market Data', 'Technology solutions', and 'Resources'. The main content area is titled 'CAC 40 INDEX OPTION (PXA)' and includes tabs for 'Delayed Prices', 'Specification', 'Settlement Prices', 'Notices', and 'Publication'. The 'Specification' tab is active, displaying a table of contract details. To the right, there are green buttons for 'More on Equity Index Derivatives' and 'Derivatives Statistics', along with links for 'Equity Index Derivatives Overview Contract List' and 'Daily derivatives statistics reports'. A 'Contract Info' section contains a 'SNAPSHOT' table with contract details.

CAC 40® INDEX OPTIONS (PXA)	
Unit of trading	10
Quotation	Euros per index point
Minimum price movement (tick size and value)	Central Order Book & Large-in-Scale Facility: € 0.10 (€ 1 per contract)
Last trading day	Trading ceases at 16:00 CET on the third Friday of the expiry month. In the event that the third Friday is not a business day, the Last Trading Day shall normally be the last business day preceding the third Friday
Exchange delivery Settlement Price (EDSP)	Price determined on the Last Trading Day. Euronext calculates the settlement index as the arithmetic mean of all index values calculated and disseminated between 15:40 and 16:00 CET, rounded to two decimal places. Such settlement index is taken, and rounded to one decimal place, to produce the closing settlement price

SNAPSHOT	
Name	CAC 40 INDEX OPTION (PXA)
Trading Code	PXA
Market	Euronext Paris
Product Type	Index Option
Currency	EUR
Activity	14 Jun 2019 13:14 CET
Volume	10,361 14 Jun 2019
Open Interest	594,569 13 Jun 2019

Source: www.derivatives.euroext.com



DERIVATIVES & CCPs

Practical example about the functioning of the Central Clearing Counterparty (CCP) when trading with financial futures

Example stock futures Telefónica:

DAY 1: INITIAL POSITION: Buy 3 futures (TEF) at 7,67 €

DAY 1: Daily Settlement Price = 7,87 €

Variation margin: $(7,87 - 7,67) \times 3 \text{ cont.} \times 100 \text{ shares} = 60 \text{ €}$

Margin: $8 \% 7,87 \times 3 \text{ cont.} \times 100 \text{ shares} = 188,88 \text{ €}$

DAY 2: Daily Settlement Price = 7,57 €

Variation Margin: $(7,57 - 7,87) \times 3 \text{ cont.} \times 100 \text{ shares} = - 90 \text{ €}$

Margin: $8 \% 7,57 \times 3 \text{ cont.} \times 100 \text{ shares} = 181,68 \text{ €}$

DERIVATIVES & CCPs

Practical example about the functioning of the Central Clearing Counterparty (CCP) when trading with financial futures

DAY 3: CLOSING POSITION at 8,27 € Daily settlement price 8,03 €.

Variation margin: $(8,27 - 7,57) \times 3 \text{ cont.} \times 100 \text{ shares} = 210 \text{ €}$

Margin: 0

Total Result:

$(P_{\text{sell}} - P_{\text{buy}}) = (8,27 - 7,67) \times 3 \text{ cont.} \times 100 \text{ shares} = 180 \text{ €}$

$VM \text{ Day 1} + VM \text{ Day 2} + VM \text{ Day 3} = 60 - 90 + 210 = 180 \text{ €}$