FRM Part 1

Book 3 - Financial Markets and Products

FUTURES MARKETS

Learning Objectives

After completing this reading you should be able to:

- ✓ Define and describe the **key features of a futures contract**, including the asset, the contract **price** and **size**, **delivery**, and **limits**.
- ✓ Explain the **convergence of futures and spot prices**.
- ✓ Describe the rationale for **margin requirements** and explain how they work.
- ✓ Describe the role of a **clearinghouse** in futures and over-the-counter market transactions.
- ✓ Describe the role of **central counterparties** (CCPs) and distinguish between **bilateral** and **centralized clearing**.
- ✓ Describe the role of **collateralization** in the over-the-counter market and compare it to the margining system.
- ✓ Identify the differences between a **normal** and **inverted futures market**.
- ✓ Explain the different **market quotes**.
- ✓ Describe the mechanics of the **delivery process** and contrast it with **cash settlement**.
- ✓ Evaluate the impact of different trading **order types**.
- ✓ Compare and contrast **forward** and **futures contracts**.

The Key Features of a Futures Contract

- A futures contract is a **standardized**, **exchange-tradable obligation** to **buy or sell** a certain amount of an **underlying good** at a **specified price**, on a **specified date**.

Key Features:

- **Exchange-tradable** - Futures are traded on an **organized exchange** with a designated physical location.
- **Standardization** - The choice of **expiry dates is limited**, and trades have **fixed sizes**. The biggest benefit is **increased liquidity**.
- **Marking to market** - The clearinghouse performs daily marking to market. This **avoids the accumulation of large losses** over time.
- **Margins -** Each party is required to post **collateral** that can be seized in the event of default. The **initial margin** must be posted when initiating the contract. If the equity in the account falls below the **maintenance margin**, the relevant party receives a **margin call**.

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The Key Features of a Futures Contract

Key Features:

- **Clearinghouse -** The clearinghouse is an **interposed party** between the buyer and the seller which ensures the performance of the contract. **Futures contracts have no credit risk**. Each exchange has a clearinghouse. The clearinghouse splits each trade and **acts as the opposite side**; it's the buyer to every seller and seller to every buyer. There is no direct contact between the short and long parties. It's the clearinghouse that **makes margin calls** whenever the need arises.
- **Position limits** - The **number of contracts** that a speculator can hold is **capped at a certain value** by the exchange. The aim is to prevent speculators from having an undue influence in the market.

Long vs. Short Position

Long position:

- A **long exposure** in a futures contract means the holder of the position is **obliged to buy** the underlying instrument **at the contract price at expiry**.
  - The holder will make a profit if the price of the instrument goes up.
  - Conversely, they will make a loss if the price goes down.
- The long futures position can be entered by a speculator who **expects the price to rise**.

Short position:

- A **short exposure** in a futures contract means the holder of the position is **obliged to sell** the underlying instrument **at the contract price at expiry**.
  - The holder will make a profit if the price of the instrument goes down.
  - Conversely, they will make a loss if the price of the underlying rises dramatically.
- The short futures position can be entered by a speculator who **expects the price to drop**.

How Futures Margin Requirements work

- Consider an investor who enters in a **long gold futures contract at $300**.
  - Each contract is worth **100 troy ounces** (with a market value of $30,000).
  - The initial **margin required is $5,000** while the **maintenance margin is $3,000**.
- **Day 0:** Margin account balance = $5,000
- **Day 1:** The price moves **down to $290**.
  - The long position loses $10 × 100 = $1,000 (or $30,000 - $29,000)
  - Ending balance of margin account: $4,000.
  - Since this is above the maintenance of $3,000, no funds need to be added to the account, i.e., **no margin call**.
- **Day 2:** The price moves further **down to $278**.
  - The long position suffers a loss of $12 × 100 = $1,200 (or $29,000 – $27,800)
  - This leaves the margin account with just $4,000 − $1,200 = $2,800, which is below the maintenance margin.
  - The investor will receive a margin call requiring them to **deposit $2,200** into the margin account to **bring it up to the initial margin required**.

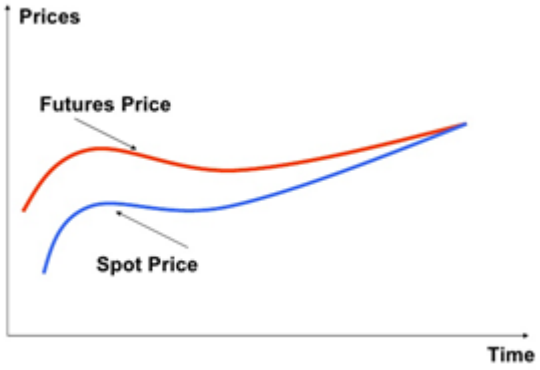
➢ The amount (required to bring the account back to the initial margin) is called the **variation margin**.

Convergence of Futures and Spot Prices

- The **spot price** is the current market price at which an instrument or commodity is bought or sold **for immediate payment and delivery**.
  - The futures price, on the other hand, is the price of an instrument/commodity today **for delivery at some point in the future**, called the maturity date.
- The difference between the two is called the basis:

$$Basis = Spot\ price\ - Futures\ price$$

- As the **maturity date nears**, the **basis converges toward zero**, i.e., the spot price tends towards the futures price.
- At maturity, Futures price = Spot price.



Collateralization in OTC Markets

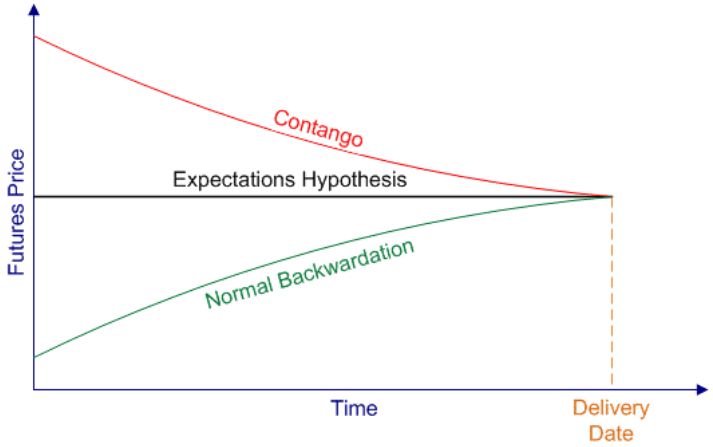
- **OTC markets** have more **credit risk** compared to organized exchanges because the other party in an OTC contract could **default on its payments**.
- One of the approaches used to mitigate this risk is **collateralization**.
  - Collateral is the set of assets – securities or cash – given as security by both parties in a contract to **hedge against credit risk**.
  - In case of default, the collateral posted by the defaulting party is **used to compensate the other party** for the financial loss suffered.
- Apart from cash, other acceptable collateral securities include:
  - Negotiable securities such as **government bonds** and **AAA-rated corporate bonds**.
  - Performance bonds – documents issued by a bank or insurance company **committing to cover the debts of a third party in case of failure**, usually up to a maximum amount.
- To avoid complications, collateral securities that are **near maturity** or those with **anticipated coupons** during the lifetime of the hedged transaction are not used.

Collateralization in OTC Markets

- Any loss is **settled using the collateral at the end of the day**. This closely resembles margining in organized exchanges where the futures trader is required to deposit “restoration” funds once the margin account drops below the maintenance level.
- In recent years, OTC markets have increasingly embraced the use of clearinghouses in trading:
  - It allows for **automatic posting** of **collateral**;
  - It reduces **credit risk**; and
  - It results in increased **transparency** in the market.

Normal vs Inverted Futures Markets

- A normal futures market, also known as a **Contango market**, means that futures contracts are trading at a **premium to the spot price**.
  - For example, suppose the price of a barrel of **crude oil today is $50** per barrel, but the price for **delivery in three months is $53**: the market would be in Contango.
- On the other hand, if crude oil is trading at **$50 per barrel for delivery right now**, and the **three-month contract is trading at $45** per barrel, then that market would be said to be inverted (**backwardation**).
- A normal futures curve will show a rising slope as the prices of futures contracts rise over time; an inverted futures curve will show a falling slope.



Terminating a Futures Contract

- Traders with short or long positions in futures contracts can terminate them in **one of four ways**:

Delivery

- A short terminates the position by delivering the goods, and the long pays the contract price.

Closeout

- This is a scenario where the futures trader closes out the contract even **before the expiry**.
- If a trader has a long position, they will take an **equivalent short-term position** in the same contract, and both positions will **offset each other**.

Cash settlement

- In this scenario, a trader just leaves his position open, and when the **contract expires**, his **margin account will be marked-to-market** for P&L on the final day of the contract.

Exchange-for-physical

- In this case, a trader finds another trader who has an opposite position in the same futures contract and **delivers the underlying assets to them**.
- This happens outside the designated trading floor, but the traders are obliged to **inform the clearinghouse** of the transaction immediately afterward.

Different Trading Order Types

- A trader uses a futures order or options order to tell his broker exactly what to **buy or sell**, **when to do it**, and at **what price**.
- There are several order types:

Market order

- It instructs the executing broker to buy or sell futures contracts **immediately** at the **market price**, the best possible price.

Limit order

- Limit orders are orders to buy or sell **away from the current market price**. A limit buy order is placed below the current market price while a limit sell order is placed above the current market price.

Stop loss order

- A stop loss order has three main uses:
  - To cut short (**minimize a loss**) on a long/short position
  - To **safeguard a profit** on a long/short position
  - To **initiate a new** long/short position

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Chapter 5

FUTURES MARKETS

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