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Introduction

Short selling is the process where investors sell a security that they do not own. Not all markets allow this – most allow short sales on selected securities with restrictive conditions.

The fundamental foundation for the arbitrage pricing theory (APT) is the **law of one price**, which states that 2 identical items will sell for the same price

Arbitrage conditions are:

A **derivative** is a financial contract whose price and performance are based on, or derived from, the price and performance of something else.

- Performance in this context is how much the contract holder pays or receives at settlement.
- Something else can be assets (commodities, stocks, bonds) or an index (interest rates, stock market indices)

Hedging refers to activities that seek to reduce the risk that market participants face from potential future movements in a market variable/risk factors (exchange rates, commodity prices etc)

Speculators are those who bet on the future movement of a market variable and take position in the market to profit from the bet (or lose)

Arbitrageurs take offsetting positions in two or more instruments with no net investment to make a riskless profit.

Why derivatives:

- To hedge risks
- To speculate (take a view on the future direction of the market)
- To lock in an arbitrage profit
- To change the nature of a liability
- To change the nature of an investment without incurring the costs of selling one portfolio and buying another

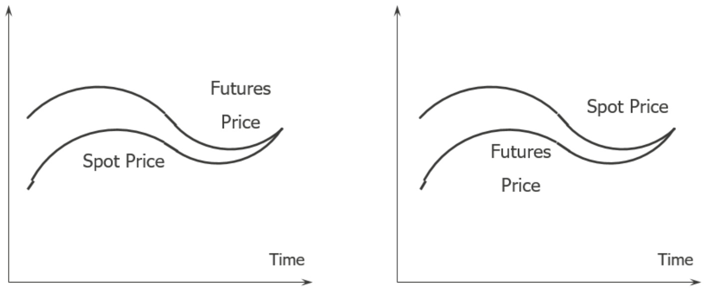
Futures and Forwards

- A **forward** is a private agreement between two parties, a buyer and a seller, that calls for delivery of an asset at a future date with a price agreed upon today
- A **futures contract** is an agreement between two parties to buy or sell an asset a certain time in the future for a certain price.

Forward	Futures
Traded in over-the-counter market: Private contract between two parties.	**Traded on an exchange.** Buyers and sellers deal with the exchange's clearinghouse who acts as intermediary and guarantor
Tailored: The terms of the contract are reached via private negotiation between both parties to the contract	**Standardised:** The exchange specifies the exact nature of the agreement ie the asset, contract size, settlement method, expiry date etc
Margin and settlement: Traditionally there is no cash outlay at the start of the contract Forwards are settled at end of the contract (To compete with the exchanges, OTC market imitates the margin system by introducing *collateralisation.* In this way, OTC contracts are revalued everyday, and losses are required to be covered by posting collaterals. This provides credit risk protection. However it can encourage people to take **excessive amounts of other risk** due to the ability to leverage. Thus, they protect counterparty risk but don't eliminate credit risk/liquidity risk.)	**Margin and settlement:** Require an initial margin to be deposited (in both long and short position). At the end of each day, the position is *marked to market* (settled daily). - A settlement price is determined for the day, and the difference between the current settlement price and previous days settlement price is computed. - The profit (loss) is added (deducted) from the margin account. - If the loss takes the balance below a certain level (maintenance margin) a margin call (variation margin) is required to top the margin account back up to the initial margin. The implication of this is that it can create liquidity issues. Futures can be settled before expiration by engaging offsetting transactions. Because of this ability to offset, futures are said to be fungible.
Delivery: Both forwards and futures specify either physical or cash settlement. For forwards, delivery or final cash settlement usually takes place Physical: the short position physically delivers the underlying asset to the long position and receives cash (forward/futures price) Cash settlement: Difference between spot price at expiry and forward price will be exchanged	**Delivery:** The vast majority of futures contract do not lead to delivery as traders chose to close out their positions prior to the delivery period specified (entering in an opposite trade to the original one). Cash settlement: It is the difference between the settlement price on *last trading date* and previous settlement price
Counterparty risk: Forward contracts are subject to counterparty risk (default of the counterparty).	**Counterparty risk:** Futures contracts are not subject to counterparty risk because the risk has been assumed by the clearinghouse: - Clearinghouse acts as intermediary and guarantees performance of the parties to each transaction

	- It protects itself by enforcing margin requirements through the whole system from members to brokers to customers
Liquidity: Typically low	**Liquidity:** Typically higher than forward markets because their standardised terms and conditions make investors more willing to trade and because of their offsetting ability.

As the delivery period for a futures contract is approached, the futures price converges to the spot price of the underlying asset. When the delivery period is reached, the futures price equals – or is very close to – the spot price. If this was not the case, arbitrage opportunities would exist ie if futures price above spot price, short the future, buy the asset and make the delivery.



Transaction Costs

- Generally, futures trading entails much lower costs than stocks/bonds and options. Forwards are private, hence more costly to trade.

Transaction costs in futures:

- Commissions or brokerage fees: paid at the order's initiation and includes both opening and closing commissions: called round-trip commission
- Bid-ask spread: arising because floors traders quote a lower price they're willing to buy and higher price they're willing to sell
- Delivery costs: substantial delivery cost for commodities futures (transportation, delivery, storage):→ cash delivery is preferred