OPTIONS

Module 4

Options Contract Specifications

Underlying Asset:

Every options contract is associated with an underlying asset. This could be stocks, stock indexes, exchange-traded funds (ETFs), or even commodities.

Option Type:

Options contracts can be either call options or put options.

a. **Call Option:** Gives the holder the right (but not the obligation) to buy the underlying asset at a specified strike price before or at the expiration date.
b. **Put Option:** Gives the holder the right (but not the obligation) to sell the underlying asset at a specified strike price before or at the expiration date.

Strike Price:

The strike price, also known as the exercise price, is the price at which the option holder can buy (for a call option) or sell (for a put option) the underlying asset. It is a fixed price specified in the options contract.

Expiration Date:

Options contracts have a limited lifespan. The expiration date is the last day on which the option can be exercised. After this date, the option becomes worthless.

Contract Size:

The contract size specifies the quantity of the underlying asset covered by a single options contract. It is often standardized, with one options contract typically representing 100 shares of the underlying stock.

Exercise Style:

Options can be either European-style or American-style.

a. **European-Style Options:** Can only be exercised at expiration.
b. **American-Style Options:** Can be exercised at any time before or at expiration.

Options Contract

Option Premium:

The option premium is the price paid by the options buyer to the options seller. It represents the cost of obtaining the rights conveyed by the options contract.

Option Symbols:

Options are identified by unique symbols that convey information about the underlying asset, type of option, expiration date, and strike price. These symbols are standardized and used for trading and tracking.

Listed Exchanges:

Options are traded on specific exchanges. The contract specifications may include information about the exchange where the options are listed.

Settlement Method:

Options contracts can settle in one of two ways:

a. **Physical Settlement:** The actual delivery of the underlying asset.
b. **Cash Settlement:** The difference between the option's strike price and the market value of the underlying asset is paid in cash.

Position Limits and Exercise Limits:

Exchanges may set limits on the number of options contracts an individual or entity can hold (position limits) and the number that can be exercised in a given period (exercise limits).

Call Option:

A call option is a financial contract that gives the holder the right (but not the obligation) to buy a specified quantity of an underlying asset at a predetermined price (strike price) within a specified period (until expiration).

Call options are often used by investors who anticipate an increase in the price of the underlying asset. By holding a call option, they have the right to buy the asset at a fixed price, regardless of how much the market price rises.

Put Option

A put option is a financial contract that gives the holder the right (but not the obligation) to sell a specified quantity of an underlying asset at a predetermined price (strike price) within a specified period (until expiration).

Put options are typically utilized by investors who expect a decline in the price of the underlying asset. Owning a put option provides the right to sell the asset at a predetermined price, serving as a form of insurance against potential losses.

Difference Between Futures & Options

Aspect	Futures	Options
Obligation to Buy/Sell	- Buyer must buy at expiration. - Seller must sell at expiration.	- Call option buyer has the right to buy. - Put option buyer has the right to sell.
Flexibility	- Both parties are obligated to trade.	- Buyer has the right to choose whether to exercise.
Risk and Reward	- Unlimited profit and loss potential.	- Limited risk for the buyer, unlimited profit potential. - Seller's risk is limited to the obligation.
Price Determination	- Determined by the market.	- Premium determined by asset price, volatility, time, and interest rates.
Market Presence	- Traded on organized exchanges with standard terms.	- Traded on organized exchanges or OTC with customized terms.
Margin Requirement	- Both buyer and seller required to deposit margin.	- Only the seller is required to deposit margin.
Expiration	- Monthly expiration dates.	- Various expiration dates, can be settled by physical delivery, cash, or expiration.

American Options:

Characteristics: American options can be exercised at any time before or on the expiration date.

Flexibility: The flexibility to exercise the option at any point before expiration adds versatility, allowing the option holder to capitalize on favorable price movements in the underlying asset.

European Options

Characteristics: European options can only be exercised at the expiration date, not before.

Simplicity: The limitation to exercising only at expiration simplifies the decision-making process for option holders, as they don't need to continually assess whether to exercise the option.

Pay-off and Pay-off Diagrams

01

Payoff and payoff diagrams are concepts commonly used in finance to illustrate the potential profits or losses of an investment or trading strategy at different levels of the underlying asset's price

02

The payoff of an investment or trading strategy is the profit or loss at a specific point in time. It represents the actual monetary gain or loss resulting from the performance of the underlying asset.

03

A payoff diagram is a visual representation of the potential profit or loss of an investment or trading strategy across a range of possible prices for the underlying asset at expiration. The x-axis typically represents the possible prices of the underlying asset, while the y-axis represents the profit or loss.

04

A payoff diagram helps investors and traders visualize how the value of their positions will change with different movements in the underlying asset's price.
It allows for a clear understanding of potential risks and rewards associated with different investment strategies.

Trading

Definition: Trading refers to the buying and selling of financial instruments, such as stocks, bonds, options, or other securities, in the financial markets.

Participants: Various participants engage in trading, including individual investors, institutional investors, traders, and market makers.

Marketplaces: Trading can occur on organized exchanges (e.g., NYSE, NASDAQ) or over-the-counter (OTC) markets.

Order Types: Investors can place different types of orders, such as market orders (executed at the current market price) or limit orders (executed at a specific price or better).

Execution: The process of matching buy and sell orders to complete a trade.

Liquidity: The ease with which an asset can be bought or sold in the market without affecting its price significantly.

Bid-Ask Spread: The difference between the highest price a buyer is willing to pay (bid) and the lowest price a seller is willing to accept (ask).

Settlement

Definition: Settlement is the process by which a trade is finalized, and ownership of the traded securities is transferred from the seller to the buyer.

Clearing and Settlement Systems: Clearinghouses and settlement systems play a crucial role in the settlement process. They act as intermediaries, ensuring the smooth transfer of securities and funds between buyers and sellers.

T+2 Settlement: In many markets, including the United States, the standard settlement cycle is T+2, meaning the settlement occurs two business days after the trade date.

Delivery vs. Payment (DVP): A settlement method where the transfer of securities is linked to the payment, reducing the risk of non-delivery or non-payment.

Central Securities Depositories (CSDs): Institutions that facilitate the holding, clearing, and settlement of securities in electronic form.

Trade Confirmation: Once a trade is executed, both parties receive a trade confirmation detailing the terms of the transaction.

Clearing: The clearinghouse verifies the details of the trade and ensures that both parties have the necessary funds and securities to fulfill the transaction.

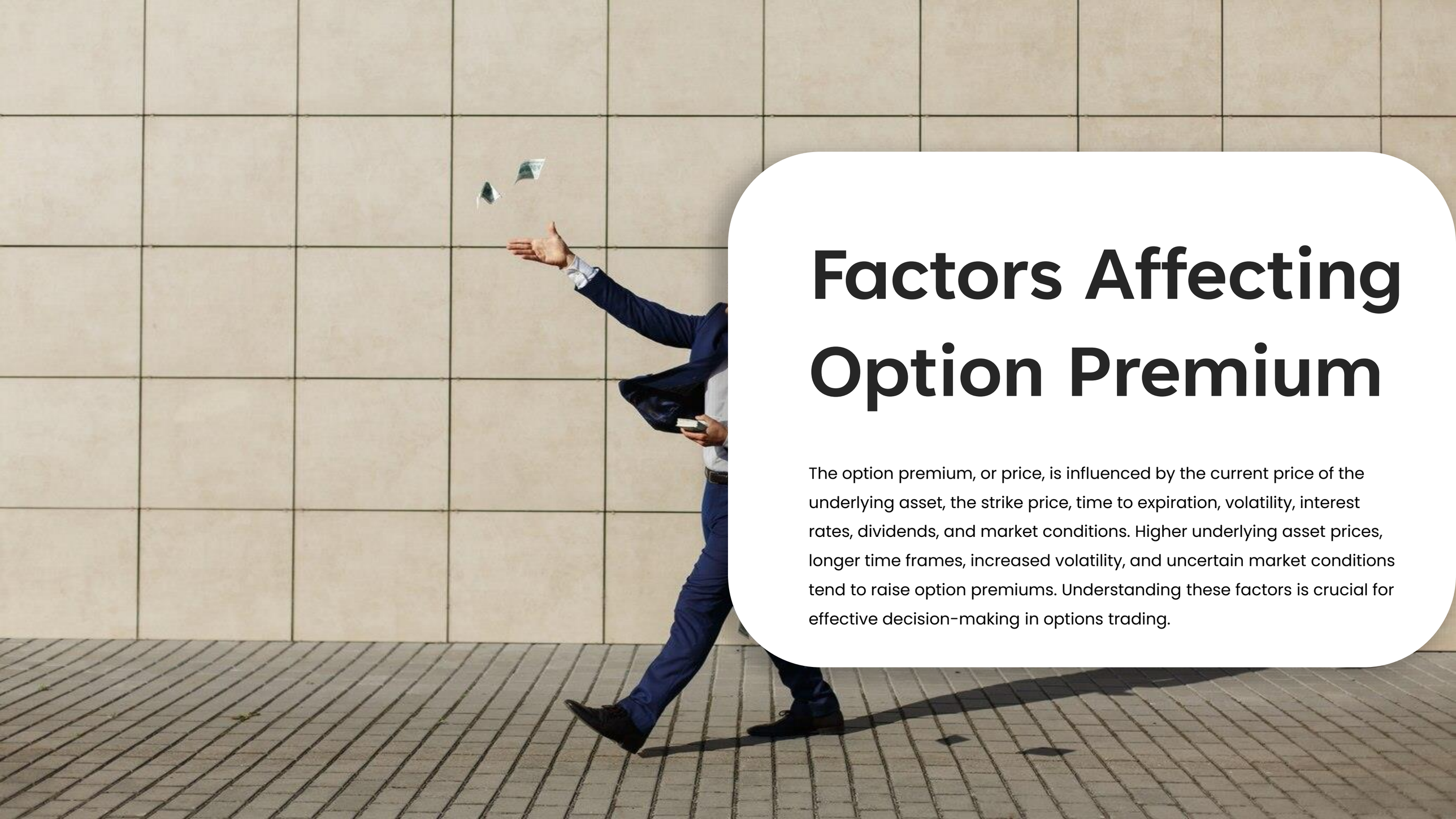
Settlement: The actual transfer of securities and funds occurs, and ownership is officially transferred from the seller to the buyer.

Record Keeping: The central securities depository maintains electronic records of ownership changes and facilitates subsequent transactions.

Option Pricing

Option pricing models, such as the Black-Scholes model, provide theoretical frameworks for determining the fair value of options. These models have certain assumptions and boundary conditions that help define their applicability.

These conditions include assuming European-style options, where exercise is only possible at expiration, no dividends are paid by the underlying asset, and constant volatility prevails throughout the option's life. The model also presupposes a risk-free interest rate, continuous trading with no restrictions on short selling, and the efficiency of markets following the efficient market hypothesis. Furthermore, the absence of transaction costs, log-normal distribution of returns, and the smooth, continuous movement of underlying asset prices are among the model's assumptions. Traders and investors should be cognizant of these conditions, recognizing that deviations from these assumptions and the dynamic nature of real-world markets may impact the accuracy of option pricing models.



Factors Affecting Option Premium

The option premium, or price, is influenced by the current price of the underlying asset, the strike price, time to expiration, volatility, interest rates, dividends, and market conditions. Higher underlying asset prices, longer time frames, increased volatility, and uncertain market conditions tend to raise option premiums. Understanding these factors is crucial for effective decision-making in options trading.

Moneyness

In options

In-the-Money (ITM): A call option is in-the-money when the underlying asset price is above the strike price. A put option is in-the-money when the underlying asset price is below the strike price.

At-the-Money (ATM): The underlying asset price is at or very close to the option's strike price.

Out-of-the-Money (OTM): A call option is out-of-the-money when the underlying asset price is below the strike price, and a put option is out-of-the-money when the underlying asset price is above the strike price.

Intrinsic and Time Value

Intrinsic Value

This is the actual or real value of an option if it were exercised immediately. For a call option, intrinsic value is the difference between the underlying asset price and the strike price (if positive); for a put option, it's the difference between the strike price and the underlying asset price (if positive).

Time Value

This is the portion of the option premium that exceeds its intrinsic value. It reflects the time remaining until expiration and the potential for the option to gain intrinsic value. Time value diminishes as the option approaches expiration.

Arbitrage-Based Relationship:

The concept of arbitrage involves exploiting price differences in different markets or securities to make a risk-free profit.

In the context of options pricing, the absence of arbitrage opportunities is a foundational principle. If an arbitrage opportunity exists, traders could take advantage of it to make risk-free profits, leading to market adjustments.


Thanks!