FRM Part 1

Book 3 - Financial Markets and Products

MECHANICS OF OPTIONS MARKETS

Learning Objectives

After completing this reading you should be able to:

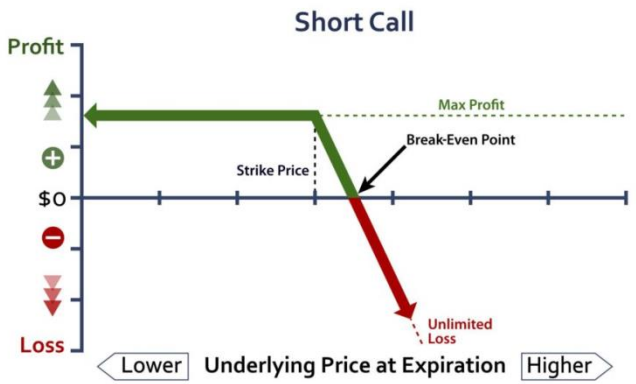
- ✓ Describe the **types**, **positions variations**, and typical **underlying assets** of options.
- ✓ Explain the specification of **exchange-traded stock option contracts**, including that of non-standard products.
- ✓ Describe how **trading**, **commissions**, **margin requirements**, and **exercise** typically work for exchange-traded options.

What is an Option?

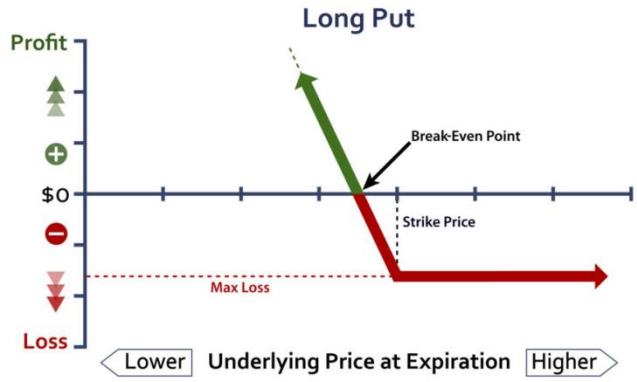
- The buyer of an option has the **right but not the obligation** to exercise the option.
- The maximum loss to the buyer is equal to the **premium paid** for the option.
  - The **potential gains** are theoretically **infinite**.
- To the seller (writer), however, the maximum gain is limited to the **premium received** after writing the option.
  - The **potential loss** is **unlimited**.

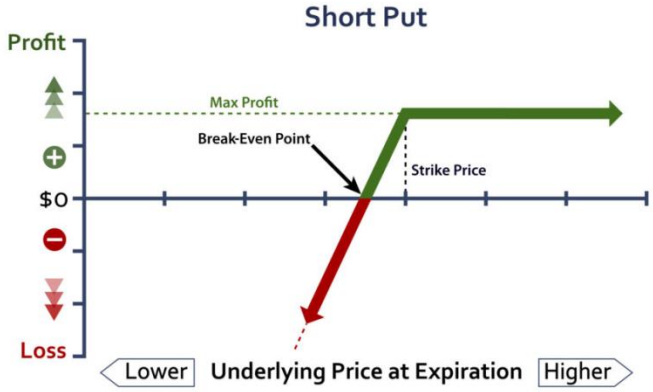
Call vs. Put Options

For call options:



For put options:





Positions Variations

For call options:

- When the stock price is **less than or equal to the exercise price**, the buyer will. Not exercise the option because the **payoff would be zero**.
  - In this instance, the **call option seller** will gain the **premium** received.
- If the stock price is **higher than the exercise price**, the long will most likely **exercise the option**.
  - The **payoff of the call** will be equal to the difference between the market price and the strike price (**$S_t - X$**).

For put options:

- At expiration, the **buyer** will only benefit if the prevailing market price is **less than the exercise price**.
- The payoff is equal to (**$X - S_t$**).
- If the stock stays at X or above, the **payoff to the buyer** will be **zero** and the **put option seller** will gain the **premium** received.

Underlying Assets

- Options can be initiated upon **several underlying assets**.
  - In this regard, we can have **four main types of options**:

Stock options

- These are usually **exchange-traded**, **American style** options.
- A single option contract is usually made up of **100 stocks**.
- This implies that if a call option is trading at $5, the contract would cost $500.

Currency options

- The holder of a currency option has the right to buy or sell an amount of foreign currency based on a domestic currency amount.
- The unit size for currency options is larger than stock options.

Index options

- Index options have **stock indices** as the underlying.
- They are found in both **over-the-counter** markets and **exchange-traded** markets.

Futures options

- An option on futures gives the holder the right, but not the obligation, to **buy or sell a futures contract at a predetermined price**, on or before its expiration.

Expiration and Strike Price

Expiration

- Exchange-traded stock options can either be **American** or **European style**.
- While **European** options can only be exercised **at expiry**, **American** options can be exercised at **any point during the life of the option**.
- The **actual date** of expiry is **specified by the exchange**.

Strike Prices

- The value of the stock directly **controls the strike price**.
- At the expiration date, the difference between the **stock's market price** and the **option's strike price** determines the **payoff**.

Most active calls and puts on Facebook stock (Nasdaq)

Most Active Call

Option Symbol			Last	Change	%Change	Volume	Open Int	Bid	Ask
May 24, 2019	Call	FB	187.50	0.15	-0.42	-73.6842	6010	7388	0.14	0.15
Jun 21, 2019	Call	FB	200.00	0.56	-0.11	-16.4179	3401	38393	0.56	0.58
May 24, 2019	Call	FB	190.00	0.05	-0.09	-64.2857	2958	12976	0.03	0.04
May 24, 2019	Call	FB	185.00	0.58	-1.06	-64.6341	2544	5909	0.55	0.58
May 24, 2019	Call	FB	182.50	1.55	-1.83	-54.142	2190	1191	1.58	1.64
May 31, 2019	Call	FB	185.00	1.91	-1.02	-34.8123	1691	2164	1.86	1.91
May 31, 2019	Call	FB	192.50	0.22	-0.19	-46.3415	1239	7336	0.24	0.25
Jul 19, 2019	Call	FB	200.00	1.83	-0.32	-14.8837	1194	13519	1.80	1.85
May 31, 2019	Call	FB	190.00	0.50	-0.39	-43.8202	1071	3392	0.50	0.53
May 31, 2019	Call	FB	177.50	7.00	-2.10	-23.0769	414	601	6.40	6.60

Most Active Put

Option Symbol			Last	Change	%Change	Volume	Open Int	Bid	Ask
May 24, 2019	Put	FB	182.50	1.40	0.86	159.2593	2341	3273	1.38	1.44
May 24, 2019	Put	FB	185.00	2.99	1.70	131.7829	902	3728	2.77	2.92
May 24, 2019	Put	FB	180.00	0.65	0.42	182.6087	858	3392	0.62	0.66
May 31, 2019	Put	FB	180.00	1.87	0.90	92.7835	624	3695	1.82	1.88
Jun 07, 2019	Put	FB	182.50	3.65	1.58	76.3285	409	2292	3.75	3.90
May 24, 2019	Put	FB	177.50	0.33	0.22	200.00	278	1870	0.28	0.31
May 31, 2019	Put	FB	182.50	2.78	1.28	85.3333	265	2035	2.76	2.84
Jan 17, 2020	Put	FB	180.00	14.74	1.74	13.3846	230	8808	14.45	14.70
Jan 17, 2020	Put	FB	145.00	4.06	0.65	19.0616	230	9850	4.00	4.15
Jun 21, 2019	Put	FB	180.00	4.24	1.19	39.0164	214	14557	4.15	4.25

Moneyness

- For Call Options:
- If the stock price exceeds the exercise price, the option is **in-the-money** (ITM).
- If the stock price is less than the exercise price, the option is **out-of-the-money** (OTM).
- If the current **market price is equal to the strike price**, the option is **at-the-money** (ATM).

- For Put Options: Just the opposite
- If the stock price is less than exercise price, the option is **in-the-money** (ITM).
- If the stock price exceeds the exercise price, the option is **out-of-the-money** (OTM).
- If the current **market price is equal to the strike price**, the option is **at-the-money** (ATM).
- For Example, Call Option: Stock Price = $100, Exercise Price = $105; OTM
- For Example, Put Option: Stock Price = $50, Exercise Price = $45; OTM

Intrinsic Value and Time Value

- The **intrinsic value** of an option is the difference between the **prevailing market price** of the underlying and the **strike price**.
  - Intrinsic value of a call option = $\max(0, S_t - X)$
  - Intrinsic value of a put option = $\max(0, X - S_t)$

- The **time value** of an option is the difference between the **option premium** and the **intrinsic value**.

$$Option\ premium = Intrinsic\ value + Time\ value$$

For Example, Call Option: Stock Price = $100, Exercise Price = $95; Premium = $8.21

$8.21 = $5 + $3.21

Non-standard Products

I. **Flexible exchange (FLEX) OPTION:** These are exchange-traded options on stock indices, but there's a lot **more flexibility**. The strike price and expiration dates **can be altered** if the trading parties so wish.

II. **ETF options:** These are American-style options that are settled by **delivering the underlying shares** rather than cash.

III. **Weekly options:** These are **short-term options** with a maturity period of roughly 7 days. They are created on a Thursday, with the expiration date being the Friday of the next week.

IV. **Binary options:** Binary options have a **fixed payoff** in case the option is ITM at expiration.

V. **Credit event binary options (CEBOs):** The CEBOs payoff is triggered when the reference entity **suffers a credit event** before the option's expiration date.

VI. **Deep out-of-the-money (DOOM) options:** They will only be ITM in the event of a **large price movement** in the underlying asset.

Market Makers, Trading Commissions, and Margin Requirements

- Most options exchanges use **market makers** to facilitate trading.
  - The market maker will **quote bids and offer prices**.

- A commission refers to the **fee charged by a broker** as a reward for their efforts in **facilitating a transaction**.
  - Commission costs depend on the **size of the trade** as well as on the type of broker involved.
  - They **reduce** the investor's returns.

- In options trading, the term "margin" refers to the **collateral deposited** by the **option writer** as a form of guarantee that they will **honor their contractual obligations**.
  - Margin requirements differ from one broker to another and also depend on the **nature of the underlying asset**.

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NEXT

PROPERTIES OF STOCK OPTIONS