50 Q&As About Crude Oil Options

1. What is an option?

An option is an agreement between a buyer and a seller that gives the buyer the right to purchase or sell a given quantity of a specified asset (i.e., the underlying asset of the option) at a predetermined price (i.e., strike price) at a specified time in the future.

2. What rights is an option buyer entitled to?

In an option trade, the party that buys the option is called the buyer. The buyer pays a fee (i.e., premium) to the option seller in exchange for the right to buy or sell an agreed quantity of the underlying asset at an agreed price at the agreed time. If this price moves against the buyer, it may abandon this right under the option contract. An option is called as such because the buyer is free to choose to buy or sell or not to buy or sell.

3. What are the obligations of an option seller?

When an option buyer submits an exercise request, the option seller is obligated to fulfill the contract by buying or selling a given quantity of the underlying asset at the strike price specified in the contract.

In addition, the option seller is required to pay margin as security for the performance of this obligation when the option expires.

4. What are the functions of options in the financial market?

The Chicago Board Options Exchange (CBOE) listed the first 16 stock options in 1973, the year it was founded. To address market concerns, in late 1974, CBOE commissioned Robert R. Nathan Associates Inc. to fully assess the economic effects of stock options. This effort culminated in a famous study titled *Review of Initial Trading Experience at the Chicago Board Options Exchange*. After a comprehensive study of the on-exchange options trading systems in the U.S., the report concluded that options do not divert capital from the stock market, that they in fact help make the stock market more liquid and the stocks less volatile, and that they help draw in long-term capital.

5. How can investors use options?

By their very nature, options can be used as insurance for an investment in the underlying assets and for leveraged trading and implementation of sophisticated and precise investment strategies. They contribute to the formation of real capital.

6. Why is options trading said to be "three-dimensional" trading?

The stock market can be said to be a "one-dimensional" market, because investors can only make money when stocks rise—when price falls, the best they can do is to sell all their stocks, but no profit can be made.

The futures market can be characterized as a "two-dimensional" market, because investors can make money by taking a long position in futures when the market moves up or taking a short position in futures when the market moves down.

By contrast, in addition to enabling "two-dimensional" profit-making as in the futures market, options allow investors to do so even when the market is flat, experiencing small corrections, or due to move drastically but in an unknown direction. Before options were invented, constructing a winning investment strategy during small market corrections was a challenge. But with options, investors can make a profit during those corrections by entering into a short straddle. For this reason, options trading is said to be "three-dimensional."

7. What is "precise investment" with options?

Before options were created, when trading futures, even if the two investors do not have the same level of market forecasts, they would typically achieve the same investment return which is the price difference between long and short. But this changes with options. For example, assume Alice believes the market will go up but is not specific about when or by how much, then most likely she will just go long futures. Bob also believes the market will go up, and further thinks that it will do so in 10 days and by 5–10%. As such, Bob can buy slightly out-of-the-money (OTM) options (on account of the predicted 5+% price increase) and at the same time sell options with strikes beyond the +10% range to reduce overall investment costs. If eventually the price of the underlying goes up by 6% and the futures margin rate is 10%, then Alice stands to make a profit of 60%, but Bob may stand to make a profit of more than 200%.

In other words, with options, investment return is directly proportional to how accurate and astute an investor is in his market insight. The above example illustrates how options can facilitate precise investment strategies and increase investment returns.

8. How are options different from futures in hedging against risks?

There are two main differences:

- (1) Options can be used to manage volatility risk as their price is linked to the volatility of the underlying asset, whereas futures cannot.
- (2) While futures can help investors avoid the risk of adverse price movements, it also precludes any potential gains. Options, by contrast, enable investors to limit their potential losses without giving up profit potentials.

9. Why should investors buy options?

An investor can buy options if he predicts the market will move in a particular direction but is

also concerned about being wrong about this prediction and therefore wants to limit the risk exposures. By entering into an option position, the maximum loss to the investor is the premium paid, which is much smaller compared with the potential loss from a wrong futures position.

Another big draw for options is that they allow the buyer to make a large profit from a relatively small investment. A 10-fold or 100-fold return in a single day—often seen in the news—is an example of the profit potential of going long on deep OTM options. Although a 100-fold return over a short time span is rare, it does demonstrate the amount of leverage that options give investors.

Nevertheless, investors also shall be cautious when buying deep OTM options or option contracts that are approaching expiration.

10. Why should investors sell options?

Unlike option buyers, option sellers have to take on significant risks for limited returns. Why, then, are there investors willing to write options? Here are some of the possible reasons:

- (1) The option sellers hold an opposite view on the market. For example, buyers of call options believe the market will rise sharply, but their sellers believe the market will not.
- (2) The option sellers may implement a complex strategy to reduce cost and increase returns. For example, a Client buys one copper futures contract at RMB 50,000 per metric ton and sells one OTM call option at the strike price of RMB 53,000 per metric ton. If at a later date the futures price goes above RMB 53,000 and the option is exercised, the Client, by fulfilling the option, will in essence close out the futures position at RMB 53,000, giving a profit of RMB 3,000 per metric ton plus the premium received. If the price does not go above RMB 53,000, the Client will just keep the premium, equivalent to buying the futures contract at below RMB 50,000 per metric ton.
- (3) The decision is based on a probability analysis. Suppose that there is a 99.99% probability to earn RMB 10,000 on a product and a 0.01% probability to lose RMB 1 million, many investors will choose to buy the product despite the enormous potential loss, simply because the probability to make money is much higher. This is also true for option sellers: they will sell options if historical data tell them that there is only a small chance that those options will be exercised.

In addition, option sellers usually hedge their option positions with futures to avoid catastrophic losses in extreme market conditions.

11. What is the option premium?

Option premium or premium is the payment made by an option buyer to the option seller to obtain the right under the option contract. It is effectively the price of an option contract.

12. What are call options and put options?

A call option is an option that allows the buyer to purchase the underlying asset upon exercising that option. The higher the price of the underlying at the time of exercise, the higher the profit for the buyer.

Conversely, a put option is an option that allows the buyer to sell the underlying asset upon exercising that option. The lower the price of the underlying at the time of exercise, the higher the profit for the buyer.

13. What is the strike price of an option?

Strike price is the price specified in an option contract at which the option buyer is entitled to buy or sell the underlying asset at a specified time in the future.

14. What are at-the-money (ATM) options, in-the-money (ITM) options, and out-of-the money (OTM) options?

Depending on how the strike price compares with the price of the underlying asset, options can be classified as in-the-money, at-the-money, and out-of-the money options. A call option is ITM when the strike price (P_s) is lower than the price of the underlying asset (P_u), OTM when P_s is higher than P_u , and ATM when P_s is equal to P_u . A put option is just the opposite: ITM when P_s is higher than P_u , OTM when P_s is lower than P_u , and ATM when P_s is equal to P_u .

Denote the strike price as P_s and the price of the underlying asset as P_u , then:

	$P_s < P_u$	$P_s = P_u$	$P_s > P_u$
Call	ITM	ATM	OTM
Put	OTM	ATM	ITM

15. What is implied volatility?

For an option, implied volatility is the volatility back-calibrated based on the current market price of the option. It is the volatility of the underlying asset over the remaining life of the option as projected by the market. It is also the market's take on the volatility of the underlying asset over the remaining life of the option.

16. What is historical volatility?

Historical volatility is a statistical measure of changes in the price of the underlying asset of an option over a past period of time. It is the annualized standard deviation of the underlying's price-earnings ratios derived from its historical prices.

17. What factors influence the price of an option?

The price of an option is generally influenced by the price of the underlying asset, volatility, time to expiration, strike price, and interest rate.

- (1) Price of the underlying asset. Assuming all other variables remain unchanged, when the price of the underlying asset increases, the price of a call option (P_c) will rise and that of a put option (P_p) will fall; when the price of the underlying asset decreases, P_c will fall and P_p will rise.
- (2) Volatility. Volatility measures how much the price of the underlying asset changes. Assuming all other variables remain unchanged, a higher volatility means a higher P_c and P_p .
- (3) Time to expiration. For option buyers, more time before expiration means higher likelihood to make a profit. Assuming all other variables remain unchanged, the further away an option is from expiration, the higher the P_c and P_p are.
- (4) Strike price. Assuming all other variables remain unchanged, P_c decreases with increasing strike price and P_p increases with increasing strike price.
- (5) Interest rate. Assuming all other variables remain unchanged, a higher interest rate means a higher P_c and a lower P_p . In addition, the further away an option is from expiration, the more its price is affected by a rate change.

18. What does it mean to "exercise" an option?

Exercising an option refers to the situation where the buyer exercises the right granted by the option to buy or sell a certain quantity of the underlying asset at a specified price at a specified time. If the buyer chooses to exercise its option, the seller will be obligated to fulfill it.

19. When can an option buyer exercise its option? What are the different "styles" of exercise?

An option buyer can exercise its option at the time indicated in the contract specifications. This time varies based on the option style. The two most common styles are American and European. The buyer of an American-style option can exercise the option on any trading day up to and including the expiration date, whereas the buyer of a European-style option can exercise the option on the expiration date only.

The INE crude oil option is an American-style option, so that buyers can exercise it on any trading day before the expiration date and on the expiration date itself.

20. How are options priced?

There are a variety of methods and models for pricing options. The most common ones are Monte Carlo simulation, the binomial model, the Black-Scholes-Merton model, and the Black model. Different pricing methods/models are suitable for different options. As an American-style option, the INE crude oil option is priced based on the binomial model.

21. What are the underlying assets of option contracts?

The assets underlying option contracts can be actuals (physicals), futures (contracts), or other assets specified in the contracts, covering commodities (energy, precious metals, nonferrous metals, ferrous metals, agricultural products, etc.) and financial instruments (stocks, bonds, etc.), among others.

22. What is the underlying asset of the INE crude oil options?

The underlying asset of the INE crude oil options is the INE crude oil futures contract, i.e., investors will receive this futures contract upon exercising (or fulfilling) the option. For example, the underlying asset of the SC2104C400 option is the futures contract SC2104. Investors who exercise (or fulfill) SC2104C400 will obtain the SC2104 contract.

23. Why did INE choose to launch the INE crude oil options?

As one of the most vital commodities in the world, crude oil has a bearing on all aspects of life. China's recent economic boom and rapidly rising standard of living have driven up its demand for crude oil to enormous levels. In fact, China is now the second-largest crude oil consumer and the largest crude oil importer in the world. In 2020, the country reported an apparent consumption volume of 736 million metric tons and an import volume of 541 million metric tons. Because oil price fluctuations have had major impacts on China's economy and crude oil industry, there is a strong demand for tools that help manage this risk.

China's crude oil futures contract was listed on INE on March 26, 2018. The market has been operating smoothly since then, with rising trading volume and open interest, improving market participant structures, and increasing linkage with the real economy and physical trades. The contract is becoming increasingly influential at home and abroad and gives domestic oil-industry enterprises an effective tool to manage risks. But as these enterprises become more sophisticated at risk management and oil prices become more unpredictable, crude oil futures alone are no longer sufficient for this role, which is why there has been a growing call for the launch of crude oil options.

Listing crude oil options (when the time is right) will allow the futures market to better fulfill its functions, encourage oil-industry enterprises to create more robust pricing mechanisms, and provide an effective and flexible risk management tool to all upstream and downstream enterprises in the oil industry.

24. What is the minimum price fluctuation of the INE crude oil options?

The minimum price fluctuation of an option contract refers to the smallest permissible increment or decrement of the contract price. The minimum price fluctuation of the INE crude oil options is 0.05 yuan/barrel.

25. What are the contract months for INE crude oil options?

INE will list option contracts of "the nearest two consecutive months and, when the open interest of the underlying futures contract, after daily clearing, has reached a specific threshold to be separately announced by the Exchange, for later months on the second trading day thereafter."

26. How is the strike price of an INE crude oil option contract determined?

The range of strike price of an INE crude oil option contract is the previous trading day's settlement price of the underlying futures contract plus or minus 1.5 times the current day's price limit for the futures contract. The strike price interval is 2 yuan/barrel if the strike price (P_s) \leq 250 yuan/barrel; 5 yuan/barrel if 250 yuan/barrel $< P_s \leq$ 500 yuan/barrel; and 10 yuan/barrel if $P_s > 500$ yuan/barrel.

27. How can an option buyer terminate its positions?

- (1) Close-out. Close-out of an option position refers to the act of taking a reverse position in the same option contract. For an option buyer, closing out its positions means selling its existing positions in the option contract.
- (2) Exercise. Exercise refers to the act of an option holder (i.e., buyer) to exercise the right granted by the option at the time specified in the option contract. The buyer of an INE crude oil option may submit an exercise request on any trading day on and before the expiration date. Upon exercising the option, the buyer purchases (if a call option) or sells (if a put option) an agreed quantity of the underlying futures contract at the agreed price. Upon exercising the option, the original option positions of the buyer will be terminated, while the corresponding positions in the underlying futures contract will be held by the buyer instead.
- (3) Abandonment. An option buyer may submit an abandonment request on the expiration date only. If the price of the underlying futures contract is lower than the strike price of a call option or higher than the strike price of a put option on the expiration date, the option buyer will usually abandon the option. After the expiration date, the buyer's original option position will be automatically terminated and no corresponding futures position will be created.

28. How can an option seller terminate its position?

Since an option seller only has the obligation rather than the right under the contract, the only active way to terminate its position is to go long on the same contract. Alternatively, the position can be closed when the buyer exercises the option (which gives the buyer a corresponding futures position) or when the option is allowed to expire without such exercise.

29. When can a buyer of INE crude oil option contract submit an exercise request?

Since the INE crude oil option is American style, a buyer can submit an exercise request during the trading hours on any trading day before the expiration date, or an exercise or abandonment request before 3:30 p.m. on the expiration date. Notably, buyers still have 30

minutes to submit exercise or abandonment requests after market close at 3:00 p.m. on the expiration date.

30. What is the "automatic exercise" of an INE crude oil option on the expiration date?

On the expiration date of a crude oil option contract, if the option buyer does not submit an exercise or abandonment request before 3:30 p.m., the Exchange will compare the option's strike price with the current-day settlement price of the underlying futures contract to determine whether the option contract is ITM. ITM options will be automatically exercised by the Exchange, while ATM and OTM options will be automatically abandoned.

The Exchange also allows investors with special trading needs to request the abandonment of ITM options or the exercise of ATM and OTM options.

31. How can one request for the exercise or abandonment of INE crude oil options?

Investors can submit exercise or abandonment requests through the client software. Alternatively, they can contact their carrying Members or OSBPs, who will submit the requests on their behalf through the Member Service System. Similarly, investors trading through Overseas Intermediaries may submit the requests through their Overseas Intermediaries.

32. In what order are exercise requests for INE crude oil options processed?

At the time of clearing, the Exchange processes exercise and abandonment requests in either of the following sequences, depending on whether it is the option's expiration date:

	Non-expiration date	Expiration date
Step 1	Process exercise requests submitted as instructions from client software in reverse order of submission.	Process exercise and abandonment requests submitted as instructions from client software in reverse order of submission.
Step 2	Process exercise requests (including batch requests) submitted through the Member Service System in reverse order of submission. If the cumulative requested quantity exceeds the buyer's actual positions, requests will be valid to the extent of the buyer's actual positions and be processed in the foregoing order.	Process exercise and abandonment requests (including batch requests) submitted through the Member Service System in reverse order of submission. If the cumulative requested quantity exceeds the buyer's actual positions, requests will be valid to the extent of the buyer's actual positions and be processed in the foregoing order.
Step 3	-	Automatically exercise or abandon the remaining options.

The exercise and abandonment requests submitted through the Overseas Intermediary Service System will be automatically forwarded to the Member Service System.

It should be noted that on non-expiration dates, investors are not permitted to submit abandonment requests and no option will be automatically exercised.

33. How is INE crude oil options different from other domestic option products in option exercise?

Crude oil options are exercised in the same way as other domestic commodity options. Crude oil option is an option on futures contract. Upon exercise, the Exchange establishes a futures position for each of the buyer and the seller, who do not need to hold the underlying in advance.

ETF option is an option on physicals. As such, the seller of a call option and the buyer of a put option need to have ETF ready for delivery at the time of exercise.

Stock index option is an option on stock indices. Upon exercise, this type of options is cash settled based on the difference between the index's settlement price and the strike price.

34. How can one close out the futures position obtained by the exercise of an option?

At daily clearing, long and short futures positions resulting from the exercise of options can be netted between themselves or with pre-existing futures positions in the opposite direction.

Alternatively, investors can close out such futures positions as normal on the day following the day of exercise.

35. Does period-based position limit apply to INE crude oil options?

Yes. Position limit for a crude oil option contract varies based on how far it is into its lifecycle. The periods for each position limit value are divided in the same manner as the underlying futures contract.

36. Are speculative positions in INE crude oil option and speculative positions in INE crude oil futures aggregated for purposes of position limit?

Speculative positions in crude oil option and speculative positions in crude oil futures are separately tracked and mutually independent for purposes of position limit.

In addition, crude oil options are subject to absolute position limit, i.e., the position limit for each period of trading is fixed rather than varies based on the open interest.

37. Can one apply for a hedging quota for INE crude oil options?

Crude oil options and the underlying futures share the same hedging quota. Consequently, the hedging quota obtained by an investor can be used in the futures market only, the options market only, or a mixture of both.

Long hedging quota = long futures + long calls + short puts

Short hedging quota = short futures + short calls + long puts

38. Can one apply for an arbitrage quota for INE crude oil options?

At present, arbitrage quota is only available to futures contracts. It is not offered to option contracts.

39. Is TAS available to INE crude oil options?

The trade at settlement (TAS) instruction is only available to INE crude oil futures. It is not offered to crude oil options.

40. What is an option market maker?

Option market makers are institutional Clients who, having obtained the approval of the Exchange, offer two-sided quoting and related services for specified option contracts. They provide liquidity to the market.

41. Are there market makers for INE crude oil options?

Yes. The Exchange will designate market makers for crude oil options.

42. What are continuous quotes?

Continuous quotes are the continuous stream of bids and asks offered by market makers for certain option contracts.

43. What are response quotes?

In addition to continuous quotes, Non-FF Members, Overseas Special Non-Brokerage Participants and Clients may request for quotes from market makers. Market makers need to respond with quotes for the specified option contract within the specified timeframe. This type of quotes is called response quotes.

44. How do investors request for quote ("RFQ")? What are the restrictions on RFQ?

An investor may request for quote through the client software. This request is forwarded to the Exchange as an instruction. Unlike a regular order, this instruction does not contain price or quantity information.

There are two restrictions on RFQ. The first is that there should be a minimum 60-second interval between two RFQs for the same option contract. The second is that, an RFQ is invalid if the best bid-ask spread is less than or equal to the maximum bid-ask spread specified by the Exchange.

45. Is a response guaranteed following an RFQ?

Not absolutely. INE rules only require market makers to respond to a certain proportion of RFQs. This means that some requests may not receive a response.

46. How does an investor obtain access to INE crude oil options?

To obtain trading access to crude oil options, an investor can contact its futures firm to see if it meets the eligibility criteria. Eligible investors will be given this access. Please note that eligibility criteria differ for individual Clients, general institutional Clients, and special institutional Clients.

47. What are the eligibility criteria for individual Clients?

The eligibility criteria for individual Clients cover five aspects: subject, capital, knowledge, experience, and creditability:

- Subject: having full capacity for civil conduct;
- Capital: having an available balance of no less than RMB 500,000 or its equivalent in foreign currency in the margin account on each of the 5 consecutive trading days before applying for the trading code or trading access;
- Knowledge: having basic knowledge about futures trading and an understanding of the relevant rules;
- Experience: having records for no fewer than 20 simulated futures or options trades from at least 10 days of trading on domestic futures exchanges; or no fewer than 10 trades in futures, options or other centrally cleared derivatives at a Chinese trading venue in the past 3 years; or no fewer than 10 trades in futures, options or other centrally cleared derivatives in the past 3 years in overseas exchanges regulated by competent futures regulatory authorities that have an MOU on regulatory cooperation with the China Securities Regulatory Commission ("CSRC") (such overseas trading records are hereinafter referred to as the "Recognized Overseas Trading Record")
- Credibility : having no material adverse credibility records, having never been subjected to a ban from the futures market by any competent regulatory authority, and having never been banned or restricted from engaging in futures trading pursuant to any laws, regulations, ministry-level rules, or the rules of the Exchange; and
- Others: meeting other conditions required by the Exchange.

48. What are the eligibility criteria for general institutional Clients?

The eligibility criteria for general institutional Clients cover five aspects: capital, knowledge, experience, compliance, and creditability:

• Capital: having an available balance of no less than RMB 1,000,000 or its equivalent

in foreign currency in the margin account on each of the 5 consecutive trading days before applying for the trading code or trading access;

- Knowledge: having the corresponding personnel with basic knowledge about futures trading and an understanding of the relevant rules;
- Experience: having records of no fewer than 20 simulated futures or options trades from at least 10 days of trading on domestic futures exchanges; or no fewer than 10 trades in futures, options or other centrally cleared derivatives at a Chinese trading venue in the past 3 years; or having a Recognized Overseas Trading Record for no fewer than 10 trades in the past 3 years;
- Compliance: having sound internal control, risk management and other relevant rules on futures trading;
- Credibility: having no material adverse credibility records, having never been subjected to a ban from the futures market by any competent regulatory authority, and having never been banned or restricted from engaging in futures trading pursuant to any laws, regulations, ministry-level rules, or the rules of the Exchange; and
- Others: meeting other conditions required by the Exchange.

49. For Clients who already have access to other specified domestic futures or option products, do they automatically obtain access to INE crude oil options?

The eligibility criteria for crude oil options are identical to those for crude oil futures. Therefore, a Client who already has access to crude oil futures may be exempted from the knowledge, trading experience, and capital requirements upon request, but still needs to be screened for prior violations.

A Client who already has access to specified futures or option products other than crude oil may be exempted from the knowledge and trading experience requirements, but is still subject to a review on capital availability and prior violations.

50. What eligibility requirements are waived for investors such as special institutional Clients?

Unless otherwise stated by laws, administrative regulations, ministry-level rules, or the rules of the CSRC, the requirements on capital, knowledge, and simulated or real-world trading records can be waived for the following Clients who are applying for a trading code or trading access to a product subject to investor eligibility rules ("eligibility-restricted product"):

- (1) professional investors as defined in the *Measures for Eligibility Management of Securities and Futures Investors* ("Eligibility Rules");
- (2) Clients who have trading access to an eligibility-restricted product and are applying for

access to the same product at a different account-opening institution, provided the Clients can furnish the corresponding supporting materials;

- (3) Clients who have the records for executing trades in futures, options, or any centrally cleared derivatives at a domestic trading venue for no fewer than 50 trading days within the past year, or the Recognized Overseas Trading Record for the equivalent, provided the Clients can furnish the corresponding detailed trading records, settlement statements, or similar supporting documents; and
- (4) market makers, special institutional Clients, and other types of traders specially recognized by the Exchange.