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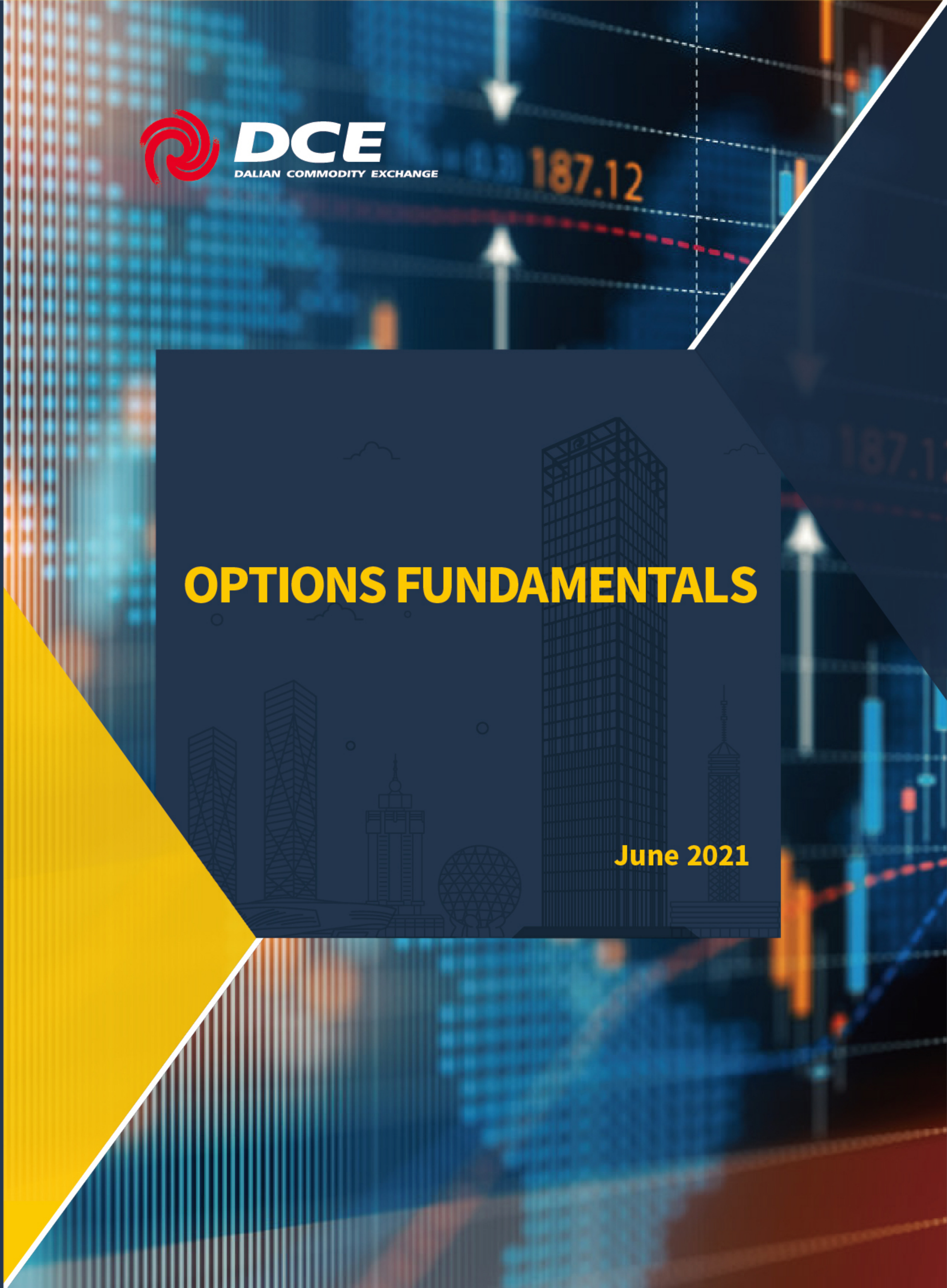


DCE
DALIAN COMMODITY EXCHANGE

OPTIONS FUNDAMENTALS

June 2021

Introduction

In financial markets, options are widely used to prevent risks such as commodity price fluctuation risk and exchange rate risk. Different types of investors usually utilize futures and options together as a trading strategy to hedge their operational risk or to get yield on investment.

This brochure gives you some fundamental information of options such as terminologies, exercise and fulfillment, components of an option' s price, Intrinsic value and time value, in the money option, at the money option, and out of the money option, expiration profit and loss, and some practical cases In order to better explain how options play its function in the derivative market.

1 Option Terminologies

Futures Contract
A futures contract means a standardized contract which is uniformly drafted by the Exchange and provides for the delivery of a specified quantity of the underlying assets at a specified place and time in the future.

Options Contract
An options contract means a standardized contract which is uniformly drafted by the Exchange and provides that the buyer shall have the right to buy or sell the agreed underlying assets at a specified price and time in the future.

Tick Size
The tick size means the minimum value of the rising or falling variation of the unit price of an option contract.

Contract Month
The contract month means the delivery month of the underlying futures contract corresponding to the options contract.

Last Trading Day
The last trading day means the last day on which the option contract may be traded.

Price Limit
The price limit of an option contract shall be the same as that of the underlying futures contract (namely, the settlement price of the immediately preceding trading day of the underlying futures contract multiplied by the corresponding ratio).

Call option
The call option means the option contract that the buyer shall have the right to buy the underlying futures contract at a specified price and at a certain time in the future while the seller shall perform its corresponding obligations.

Put Option
The put option means the option contract that the buyer shall have the right to sell the underlying futures contract at a specified price and at a certain time in the future while the seller shall perform its corresponding obligations.

Expiration Date (Expiry)
The expiration date means the last day on which the option contract buyer may exercise its rights.

Exercise Price
The exercise price means the price which is provided in the option contract and at which the buyer shall have the right to buy or sell the underlying futures contract at a certain time in the future.

Premium
The premium means the funds paid by the options buyer to obtain the rights.

2 Exercise and Fulfillment

Exercise
The process by which the buyer of an option converts the option into a long position in the underlying futures contract (a call) or a short position in the underlying futures contract (a put).

Fulfillment
The fulfillment means that upon the options buyer proposes to exercise, the options seller shall be obligated to buy or sell a certain quantity of the underlying futures contract at the exercise price provided in the contract.

If you...	
exercise a call	you choose to buy at the exercise price
are fulfilled on a call	you are forced to sell at the exercise price
exercise a put	you choose to sell at the exercise price
are fulfilled on a put	you are forced to buy at the exercise price

Exercise style
The exercise styles can be classified into American style, European style and other styles provided by the Exchange.
European style options--the buyer may exercise its rights solely on the expiration date of the contract.
American style options--the buyer may exercise its rights on any trading day prior to or on the expiration date of the contract.
All DCE options contracts adopt American style.

3 Components of an option’ s price

An option’ s price is made up of its **intrinsic value** and **time value.**

An option is said to have intrinsic value if the option is in-the-money. When an option is out-of-the-money or at-the-money, its intrinsic value is zero. The intrinsic value for an in-the-money option is calculated as the absolute value of the difference between the current price of the underlying and exercise price of the option.

For example:

You own a June 100 call with the underlying contract trading at 107.If you exercise the call, meaning you buy at 100 and sell at 107(buy low/sell high), the intrinsic value would be:

107-100=7

Example two:

You own a September 115 put with the underlying contract trading at 104.If you exercise the put, meaning you sell at 115 and buy at 104(sell high/buy low), the intrinsic value would be:

115-104=11

As a result, an option’ s intrinsic value can never be less than zero since no one would choose to buy high and sell low, or sell low and buy high. Therefore...

Intrinsic value of call options = maximum [0, F-X]
Intrinsic value of put options = maximum [0, X-F]

where F is the underlying futures price and X is the option’ s exercise price.

Since

price = intrinsic value + time value

time value = price - intrinsic value

For example

September iron ore futures trading at 1000
September 932 iron ore call options trading at 120

Price = intrinsic value + time value

Price	Intrinsic value	Time value
120	68 (1000-932)	52 (120-68)

4 In-the-money option,at-the-money option, and out-of-the-money option

Depending on an option’ s exercise price and the price of the underlying contract, an option is said to be either:

- **In-the-money**
- **At-the-money**
- **Out-of-the-money**

	In-the-money	At-the-money	Out-of-the-money
Call options	F > X	F < X	F = X
Put options	X < F	X < F	X = F
Intrinsic value	> 0	= 0	= 0

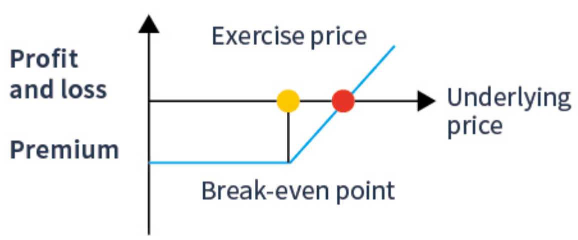
5 Expiration Profit and Loss

At expiration, an option is worth exactly its intrinsic value.

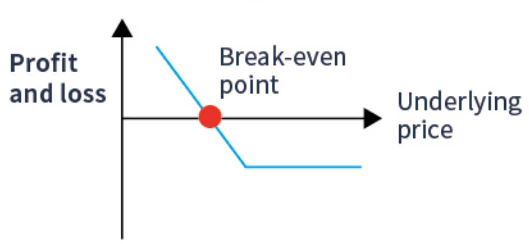
- **Zero if the option is out-of-the-money**
- **The difference between the exercise price and underlying price if the option is in-the-money**

Parity Graph - A graph which illustrates the value of an option, or option position, at expiration.

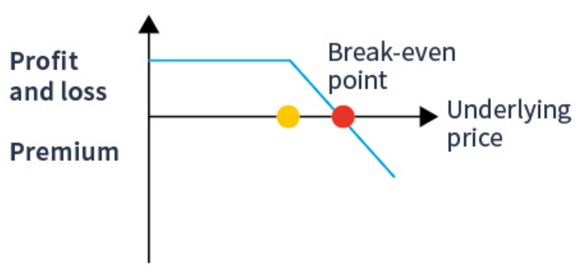
Long Call



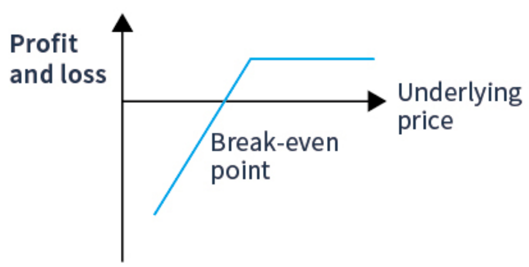
Long Put



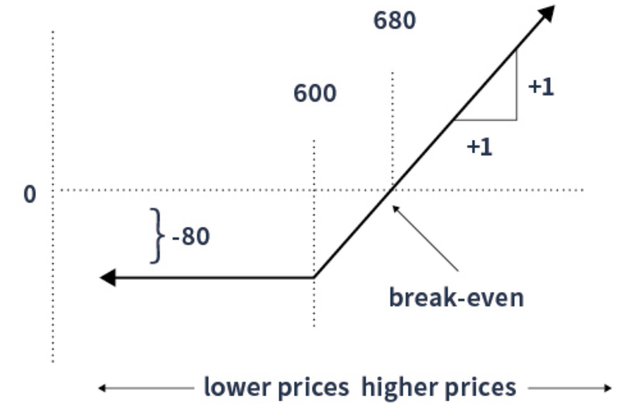
Short Call



Short Put



For example:
Buy a 600 iron ore call option at a price of 80



Suppose you long an iron ore call option and expect the iron ore futures price to go up.In this case, you pay 80 as premium with the exercise price of 600.When the futures price goes up above 680 as you expect, you can execute your right into the futures position. Otherwise, when futures price goes down below 600, you can give up executing the right in order to avoid the loss.

6 Comparison of options contract and futures contract

The differences between options and futures are mainly reflected in the underlying assets, investor rights and obligations, margin for performance, profit and loss characteristics, the number of contracts, and other aspects, which are detailed in the table below:

Comparison of Options Contract and Futures Contract

	Option contract	Futures contract
Underlying assets	Spot commodities, commodity futures contracts, financial products, and financial futures contracts	Spot commodities and financial products
Investor Rights and Obligations	The buyer has the right, but assumes no obligation,while the seller is obliged for performance.	The buyer and the seller have the equal right and obligation.
Performance margin	The buyer does not need to pay the margin for performance, and only the seller has to pay the margin.	Both the buyer and the seller need to pay the margin.
Profit and Loss Characteristics	Nonlinear	Linear
Number of contracts	A large number of contracts, which vary not only in terms of contract months, but also in the strike price, as well as the call and put options.	A fixed and limited number of contracts, with the only difference across contracts being the contract months