

UNDERSTANDING STOCK OPTIONS (AND THEIR RISKS)



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A. INTRODUCTION

This booklet aims to provide a general understanding of how exchange traded stock options can be used as an investment tool. It describes the most important characteristics of options and some of the more common trading strategies.

It also explains the risks. Without a proper understanding of the risks, it is inadvisable to engage in any option trading.

Finally, it describes the way in which stock options are traded in Hong Kong and explains the characteristics of the stock options market operated by Hong Kong Exchanges and Clearing Limited (generally referred to here as HKEx).

It is hoped that, through this booklet, investors will gain an understanding of how options may be applicable to their investment requirements and an understanding of the care that should be taken when using them.

A stock option has very similar characteristics to an option on any other type of underlying asset. Nevertheless, people who are familiar with options on other products should note that there are a number of areas in which stock options are very different from options on other instruments and should be careful to note those differences.

B. THE CHARACTERISTICS OF EXCHANGE TRADED STOCK OPTIONS

In Hong Kong, HKEx operates a market for trading options on individual stocks. Anybody wishing to trade options should in the first instance approach a broker registered to deal in securities in Hong Kong. There are no statutory legal restrictions on who can trade options but brokers are required to ensure that their clients properly understand how options work and understand the risks. In fact, before opening a client account, the broker should enquire about your investment objectives.

Exchange Participants who are eligible to execute option trades on the Exchange are known as “Options Trading Exchange Participants”. Exchange Participants who are eligible to execute option trades for clients by entering into matching trades (as principal) with an Options Trading Exchange Participant are known as “Options Broker Exchange Participants”. A list of Options Trading Exchange Participants and Options Broker Exchange Participants is available from HKEx. To trade options through either an Options Trading Exchange Participant or an Options Broker Exchange Participant, it is necessary for clients to enter into an options client agreement.

Once an account has been opened for trading options, a client gives instructions to the broker in much the same way as he or she would when dealing in stocks. But a major difference between trading in the stock market and trading in the options market is that once stock delivery and payment is completed, the contractual relationship (in respect of that deal) between broker and client is completed. With options, an ongoing relationship continues between the client and broker until the option position no longer exists which may be a period of a few hours or several months.

This can make trading options more complex than trading stocks.

WHAT IS AN OPTION?

An option is a contract entered into between two parties, a buyer and a seller. The buyer has the right, but not the obligation, to trade an underlying asset with the seller at a predetermined price, within a certain time. We commonly refer to the buyer as the *holder* and the seller as the *writer*. The position of a holder is referred to as a *long* position and that of a writer as a *short* position.

There are two types of options: a *call* and a *put*. A call option gives the holder the right to buy the underlying asset. A put option gives the holder the right to sell the underlying asset. Therefore, an option holder really has an “option” to exercise the right.

While holders have no obligations to exercise their rights, writers are obliged to honour the contracts if the holders choose to exercise - however disadvantageous this may be to the writers. When writing options, the writers risk incurring a loss or forgoing a profit. In return, they receive a “premium” from the buyers. For this reason, the price at which an option trades is generally known as the “premium”. The options buyer’s exposure is limited* to the premium paid to buy the option.

A stock option contract has three important defining elements: these are the *underlying stock*, *strike price* and *exercise period*.

Underlying Stock

Every option is issued on an underlying instrument which can be one of a wide range of products - for example, a stock, a stock index, a commodity futures contract, a currency and etc. In this case, the underlying instruments are exchange-traded stocks. Your broker can inform you which stocks have options traded on them.

Strike Price

The *strike price*, also known as the exercise price, is the price at which the option buyer and seller agree to trade the underlying stock, if the option is exercised.

* After exercise, an option holder’s exposure could change in certain circumstances to become greater than the premium paid. See Section D.

A call option whose strike price is below the market price of the underlying stock is *in-the-money*. Such an option allows the call holder to buy the shares for less than the current market price. A call whose strike price is above the underlying market price is *out-of-the-money*. Conversely, a put whose strike price is above the underlying price is in-the-money. This means the put holder can sell the asset for more than the current market price. A put whose strike price is below the underlying price is out-of-the-money.

It can be seen from this that only in-the-money options would generally be exercised by their holders because otherwise the holders can buy or sell directly in the market at a better price.

If an option's strike price *equals* the price of its underlying asset, the option is said to be at-the-money (sometimes this term is applied to options whose strike price is very close to the underlying market but not exactly equal).

Exercise Period (expiry date)

Stock options have an exercise period which limits their validity. After the expiry date of that exercise period, the option can no longer be traded or exercised. At the date of publication, option contracts with five different lengths of exercise periods were available for trading at HKEx: at any one time, there will be an expiry in the three nearest months and then the next two quarterly months (see Contract Specifications).

There are conventionally two categories of options in relation to exercise - American style and European style. An American style option can be exercised any time from its issuance up to its expiration. A European style option can only be exercised on the expiration day. An American style option offers more flexibility to its holders in terms of exercise, therefore it can command a higher premium than its equivalent European style option. At the date of this publication, stock options at HKEx were all American style.

All the above features are specified and defined in the option contract and in normal circumstances will not change during the life of the option. The premium, however, varies from option to option and fluctuates from time to time.

The option premium is quoted on a “per share” basis and options are traded in “contracts” (or “lots”) of, for example, 1,000 underlying shares per contract. The total cost of the option contract will be the premium multiplied by the number of shares the contract entitles the holder to buy or sell. (The premium is determined by a number of factors, which are described under Pricing of Stock Options below.) So, for example, if the premium is \$1.50 and there are 1,000 underlying shares in a contract, the cost of one option contract will be \$1,500.

Other Terminology

Two additional terms which are frequently used are *option class* and *option series*. An option class is all call and put options on the same underlying stock e.g. all the options on HSBC Holdings plc constitute one option class. “*Option series*” is the term used to identify a unique options contract in an option class, i.e. an option of the same type (i.e. put or call), the same strike price, and the same expiration date.

A standard form of identifying a particular option series has evolved. This is to describe the option series in terms of its class, its expiry date, its strike price and then its option type - in that order. So a call option giving the right to buy XYZ stock for \$80 a share at any time up to the October expiry date will generally be abbreviated to “XYZ Oct 80 call”.

Two other terms that will often be encountered are *open position* and *open interest*. An *open position* in a particular series is one where the result of an investor’s trades is such that he is either long of a particular option series, or short of that series. The sum of all the long positions in the market must equal the sum of all the short positions, since every holder of an option must have a corresponding option writer against whom he can exercise. The *open interest* in a given option series is simply the sum of *all* investors’ long open positions in that series (or, if you prefer, the sum of all the short open positions in that series, which is the same number).

PRICING OF STOCK OPTIONS

The price at which an option trades is generally called the “*premium*”. Just like any other market prices, the premium is determined by market forces but there are more factors

affecting the market view of the option premium than is the case with the underlying stock market. The option premium is determined by the following factors.

Underlying Stock Price

The underlying stock price is normally the most significant factor affecting the price of an option. As mentioned earlier, in-the-money options enable holders to buy or sell the underlying shares at a better price than the prevailing market price. They therefore cost more than the equivalent at-the-money and out-of-the-money options because there is more value in them. And whether an option is in-the-money depends solely on the underlying price because the strike price is fixed. The difference between the strike price of an in-the-money option and the market price of the underlying stock is called the intrinsic value. For example, a call option with a strike price of \$45 when the underlying market price is \$50 has an intrinsic value of \$5. However, it is possible that the option in this case will be traded above (or below) \$5. Even out-of-the-money and at-the-money options, which have no intrinsic value, will normally have some value. This is because there are other factors determining the value of the option. These are called “extrinsic” factors (or sometimes “time value” factors). The extrinsic factors are *time until expiration*, *dividend expectation*, *interest rate* and *volatility*.

Time Until Expiration

All other things being equal, the value of an option will diminish as the option approaches expiry, and the rate at which it diminishes will be faster the closer it gets to expiry so that close-to-expiry, out-of-the-money options can lose their value very quickly. It is for this reason that an option is often referred to as a “wasting asset”.

Dividend

The dividend factor generally only applies to stock options because most other underlying assets do not pay dividends. All other things being equal, a cash dividend will lower the share price by the present value of the dividend on the day the stock first trades “ex-dividend”. The larger the dividend, the more the share price is expected to fall. This change in the share price in turn affects the option premium. For a call option, a fall in the underlying share price will move the option

out-of-the-money, or less in-the-money, and hence cause a drop in the premium. The same fall in the underlying share price will move a put option in-the-money or more so, resulting in a higher premium for the put.

For this reason, call option holders will often exercise their options just before a stock goes ex-dividend, rather than see the value of the option fall without gaining the benefit of the dividend.

Interest Rate

For stock options, a higher interest rate is likely to raise the premium of calls and lower that of puts although, unlike options on some other underlying products, the interest rate is normally the least influential extrinsic factor for stock options.

Volatility

At any point in time, the above four factors - underlying price, time to expiration, dividends and interest rate - are all either known objectively or can generally be estimated within a reasonable margin of error. Nevertheless, two option series for which all these factors are identical can, and generally will, trade at different - sometimes significantly different - premiums. Why should this be?

The answer lies in the concept of “risk”. If one option series trades at a different premium from another, it is likely that the more expensive one represents more risk to the option writer than the other. The degree of risk is the probability that the price of the underlying stock will move, within the life of the option, from its present value to a point where the option writer incurs losses. The greater the probability that this will happen, the greater the risk and hence the higher the premium.

The degree of expected fluctuation in the underlying stock price determines the extent of the risk. The measure of this fluctuation is most commonly referred to as “volatility”. Implicit in any option premium are assumptions about the likely volatility of the stock. For this reason, one generally speaks of the “implied volatility” of the option premium, i.e. the likely volatility of the underlying stock is “implied” by the option premium. Expressed as a percentage, volatility is closely monitored by option market users as a vital indicator.

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