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.

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* *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.

USES OF OPTIONS

This section describes some of the more common ways in which investors can make use of stock options.

Risk

The most important characteristic of an option is in the nature of its risk and it is inadvisable to trade options until that risk is understood.

Section D of this booklet provides more details on options risk and the reader who is considering trading in options should read it carefully.

Profit Opportunity

With options, profit opportunities might exist no matter whether one believes the market is going to rise or fall. Moreover, there are a variety of ways in which those opportunities can be taken, by buying and/or writing options. In simple terms, a call holder and a put writer will expect to benefit from a rising market while a put holder and a call writer will expect to benefit from a falling market.

Some of the more sophisticated (but generally somewhat risky) strategies even benefit from a stagnant market. By writing options and exploiting the fact the option is a wasting asset whose value may simply evaporate over time, gains can be made as a result of the underlying market standing still. Such strategies are however only generally suitable for experienced options investors (see Section D).

Hedging

Options can provide hedges to shareholders or potential shareholders. For example, suppose a shareholder intends to hold some shares for a period of time. However, the shareholder fears the share price might fall and depreciate the value of the shareholding. This investor can then buy a put which gives the right to sell the shares at a fixed price. The strike price becomes the “floor” price of the shares and no matter how low the price falls in the market, the holder can (prior to the option’s expiry) sell the shares at that price. At the same time, if the share price rises, the investor can still gain from holding the shares, thus participating in the upward share price movement. Hence, the investors may enjoy upside potential with downside protection.

Income Enhancement

Options can be used to earn income against an existing portfolio of stocks through writing options and earning premium. Investors can write calls to be covered by the shares in their portfolio, i.e. giving the right to the call buyer to buy the shares in the investor's portfolio. If the calls are not eventually exercised, the premium received becomes additional income. Of course, if the share price does rise above the strike price, the call may be exercised and the writer must sell the shares at the strike price and forgo any profit above the strike price other than whatever was earned in premium income when the option was written.

Leverage

An option is a leveraged instrument. In the case of a long call option, an investor pays a premium to acquire the right to buy shares at a fixed price at a future date. The premium is only a portion of what the investor would pay if he buys the shares outright. If a share price rises by a certain percentage, most long call options on that share will rise by a greater percentage (of the option's premium). The money amount of the profit in options may be smaller than that arising from an outright investment in the share itself, but the rate of return may be much greater and the amount of money put at risk can be much less.

Of course, the leverage effect also has its downside implications. If the share price drops and makes the call far out-of-the-money, the value of the premium will suffer a larger percentage drop than the share price, notwithstanding that the extent of the loss is limited to the cost of the premium. In addition, the leverage effect can compound geometrically the losses that can occur in relation to short options.

Buying options should not be viewed simply as another form of "buying on margin" where an investor pays the broker an initial deposit which is a fraction of the purchase price of the share. With margin buying, if the share falls sufficiently, the investor can be called upon to pay more or forfeit his margin deposit. In contrast, a long call option position can be retained (up to its expiration date) to benefit from any subsequent recovery in the stock price or the call option may be sold for its remaining value.

The same strategy can be used in buying put options to achieve a leveraged return from a falling market.

EXCHANGE TRADED OPTIONS

Options are traded at HKEx via an automated electronic trading system. The people who have direct access to this system for the purpose of trading are Exchange Participants who are registered as Options Trading Exchange Participants.

HKEx operates a surveillance system that is able to monitor every order that is entered and every trade that occurs thus providing an audit trail of activity which helps maintain an orderly and fair market.

Market Makers

In order to promote liquidity, HKEx also operates a market maker system for the stock options market. Certain Options Trading Exchange Participants are designated as Market Makers. Market Makers are bound by HKEx rules to provide a firm quote for a minimum number of lots in a particular option series and within a maximum bid-ask spread, whenever requested to do so by another Options Trading Exchange Participant. Options investors are therefore provided with some comfort that they can obtain a price for any option series that is currently trading. However, it should be noted that in certain cases - for example for very low value options that are close to expiry - it may be difficult to obtain a quote.

Central Clearing House

All stock option contracts traded at HKEx will be cleared through a central clearing house - The Stock Exchange of Hong Kong Options Clearing House Ltd.(SEOCH), a wholly owned subsidiary of HKEx. By novation, SEOCH acts as a counterparty to its Participants in relation to each option contract traded on HKEx and manages counterparty risk by, amongst other things, margining those Participants daily. It may also impose limits on the size and types of positions the SEOCH Participants may keep. SEOCH is solely engaged in the business of managing risk and contract performance and has no other business function.

However, the Clearing House's role as a counterparty only extends to the SEOCH Participants and not to any clients or other counterparties. If an Options Trading Exchange Participant or Options Broker Exchange Participant defaults on any of its obligations to its clients, the client's only recourse is to the Options Trading Exchange Participant or Options Broker Exchange Participant itself; there is no relationship in regard to options contracts between SEOCH and entities who are not SEOCH Participants, such as a Participant's client.

No Options Broker Exchange Participants are Participants of SEOCH. Not all Options Trading Exchange Participants are Participants of SEOCH. To become a Participant of SEOCH it is necessary to be an Options Trading Exchange Participant and to meet additional financial and operational requirements.

Role of SEOCH in Marking to Market and Calling Margin and Holding Collateral

After the close of trading each day, SEOCH values all open positions (as well as pending stock positions arising from the exercise and assignment of its Participants) with the settlement prices of each option series and assesses a margin requirement based on this valuation. This process is called Marking to Market. The SEOCH collects this mark-to-market margin on a daily basis but may collect margin at other times as it sees necessary.

The mark-to-market margin represents SEOCH's estimate of the cost of liquidating the open position at current market levels. In addition, in order to provide a buffer against any further adverse movements in the market that may occur before the next margin calculation, SEOCH also collects an additional amount, over and above the mark-to-market margin. This is called additional margin.

SEOCH may accept as margin collateral cash, letters of credit, bank guarantees, securities, Exchange Fund Bills and Notes, etc. as may, from time to time, be so designated by the Board and in such form as may be required by the Board. You should ask your broker about the forms of collateral the broker will accept.

Stock Options Series Available for Trading

At any one time, HKEx will provide many strike prices for investors to choose from, some in-the-money, some out-of-the-money and perhaps some at-the-money for five different expiry months. HKEx reviews the options series daily after the market close to ensure that there are at least two in-the-money, one at-the-money and two out-of-the-money options series are available or added (if necessary) for trading on the next trading day following the intra-day movement of the underlying stock. These choices in strike prices and duration enable investors to select an option series most suited to their market views.

Placing Orders for Stock Options

HKEx's options trading system accepts a number of different type of orders to buy or sell stock options. For example, a *limit order* is an order to buy or sell an option at a specific price or better. Your broker can provide you with further information on placing orders to buy or sell stock options as well as the types of stock options orders accepted by the trading system.

Options Broker Exchange Participant

Before trading through an Options Broker Exchange Participant, you should check whether the broker is prohibited by its terms of participantship from carrying short option positions. When trading through such a broker, you will only be able to open and close long option positions; you will not be able to write options through this broker.

EXERCISE AND SETTLEMENT

In practice, it may happen that most option positions are either closed out in the options market before expiry or they expire unexercised. Nevertheless, exercising an option rather than closing it out may be a sensible course for option holders.

Options holders and writers therefore need to be sure they are familiar with the process.

An option holder must instruct his or her broker to exercise a stock option. The broker firm itself will have a deadline every day after which the Clearing House will not accept exercise instructions and so the broker will most likely impose an earlier time deadline on clients.

Although SEOCH has a facility whereby certain deep in-the-money options are automatically exercised upon expiry, the broker is able to over-ride this feature. It is therefore important for you to inform your broker that you wish to exercise.

When an option is exercised, SEOCH selects, on a random basis, the short open positions against which to exercise. If the accounts of the Exchange Participant's clients are assigned, the Exchange Participant must in turn assign, on a random basis, the short open positions of the clients. The assigned clients are then required to deliver (in case of a call option writer) or buy the underlying stock (in case of a put option writer). Stock transactions resulting from the exercise of options are cleared under the Continuous Net Settlement System of Hongkong Clearing. This arrangement not only smooths the settlement process, but also strengthens the cross-market risk management measures, by combining all the stock settlement positions resulting from the exercise of options and transactions from the stock market into the same portfolio for risk management purposes.

Stock options at HKEx are American style. Option writers therefore need to be prepared for assignment at any time, including on the same day the option is written.

An option position which is exercised or assigned will require the parties to deliver or pay for the underlying stock within the required stock settlement period (the second business day after exercise). It should be noted that the exercise of stock options results in the physical delivery of stock in contrast to other types of options exercise, which result in cash settlement.

CAPITAL ADJUSTMENTS

When a company makes changes to its capital structure by way of rights issues, bonus issues, etc., the price at which the share trades changes as soon as the share trades ex-entitlement or on the effective date. This can affect open option positions.

All other things being equal, the value of a shareholder's portfolio will not change on the ex-date. But the same is not true of the holder (or writer) of an option on those shares, unless an appropriate adjustment is made to the terms of the option contract. Without a change to the strike price and/or the number of shares in the option contract, the share price adjustment will arbitrarily and unfairly affect the value of the option position.

SEOCH calculates the adjustment ratio that it believes is required to maintain the fair value of the option contracts. The strike prices of all series in that class are multiplied by the ratio and the number of shares in each contract are divided by the ratio.

These adjustments will only be made for substantial changes, not for ordinary dividends. Options Trading Exchange Participants and Options Broker Exchange Participants are required to inform their clients of these changes.

C. COMMON OPTION STRATEGIES

There is a wide range of strategies involving options which an investor can apply. The following section discusses some of the most basic option strategies. These may be suitable to general investors as they can offer profits while limiting risk or maintaining risk at similar levels that investors are accustomed to in stock trading.

There are many more strategies available which are not described here but which your broker may be able to advise you about.

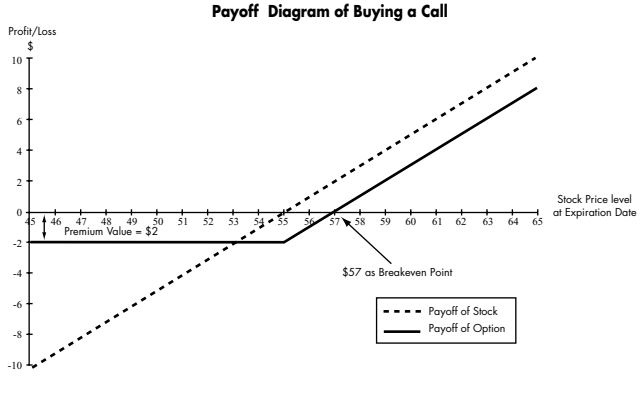
In the examples below, the share prices and premiums cited are for illustration only and do not necessarily represent actual behaviour, though they do reflect realistic situations. Also, brokers' commissions and other levies are not taken into account.

> No option strategies should be attempted until you are satisfied that you understand the risk. See Section D of this booklet.

Call Buying

Buy a call to participate in an upward share price movement

The current share price of XYZ as of mid-September is $55. You expect it to go up, so you buy an XYZ Oct 55 call at $2. The option entitles you to buy one board lot of XYZ shares (1,000 shares) before the last but one trading day in October (the expiry date). Your investment is $2,000.



If the share price goes up to $60 by the expiry date, you can exercise the call to buy the shares for $55 and resell the shares in the market at $60, and make a profit of $5 per share. Your final profit would be the difference between the market price and the strike price, minus the premium i.e. $60,000 - $55,000 - $2,000 = $3,000, a profit of 150%.

Alternatively, you might sell the option in the market before it expires. For instance, when the option becomes in-the-money as a result of the rise of the share price to $60, the premium may increase to (for example) $6, which is $5 intrinsic value plus $1 time value. Selling this call option in the market at that time would return $6,000, a profit of $4,000 or 200%. This compares with 9% if you had bought the shares outright.

On the other hand, if the share price drops to $50 before the call expires, the call becomes out-of-the-money and the premium falls to, say, $1 (or less, this is purely extrinsic value). Although you would not exercise it, you may still be able to sell the call for $1,000, reducing your loss to $1,000. Even if you allow the option to expire unexercised, your loss would be no more than the entire premium of $2,000.

Buy a call to secure a purchase price

XYZ shares are trading at $55 in mid-September. You are optimistic about the share movement, but for cash flow reasons, you do not have the cash to buy the shares until October. You fear that, by that time, the share price would have risen and become no longer attractive for you.

Under these circumstances, you buy a XYZ Oct 55 call, which could be trading at $2. If your expectations are right, the share price does rise to $60, and if you have the cash ready, you can exercise your call and still obtain the shares for $55 each, instead of $60 in the market. Your total cost for owning the XYZ shares is $55,000 + $2,000 (premium) = $57,000. This compares with $60,000 if you had not bought the call, a saving of $3,000.

If you do not have the cash readily available to pay for the shares, it may still be possible to sell the call itself. The option should still be worth its intrinsic value of $5 ($60 minus $55 strike price) giving you the same type of return as in the previous example.

If the share price remains at $55 or falls, the call does not move in-the-money but you may still sell the call to receive the remaining time value. The maximum loss occurs when you allow the call to expire worthless. In this case, the maximum loss is $2,000.

In both of the above cases, buying the call allows you to gain if the share price goes up (prior to the option's expiration) but if it falls, the maximum loss is the premium of the call.

Buy a call to retain exposure to the stock after taking profits

You are holding a board lot of share XYZ, purchased at $49. The current market price is $55. You feel that you would like to take your profits, but there is a possibility of further rises in the stock.

You sell the XYZ shares for $55 and realise a profit of $6. You decide to buy a $55 call expiring in 2 months for $2, thus sacrificing $2 of your $6 profit for the opportunity to continue to participate in any increase in the stock price.

If the market rises to $57 prior to the option's expiration date, you should, by selling the option, be able to retrieve the $2 between the market price of $57 and the strike price of $55. You therefore benefit from the price rise - all the time having already taken $4 in cash profits.

If the stock price falls, you lose the $2 premium for the option but you will have retained your $4 profit from the sale of XYZ.

In this case, your profits from the sale of the stock were already realized. But the buying of the call gave you the chance to keep some of your profits and benefit from any further upside.

Put Buying

Buy a put to benefit from a downward share price movement

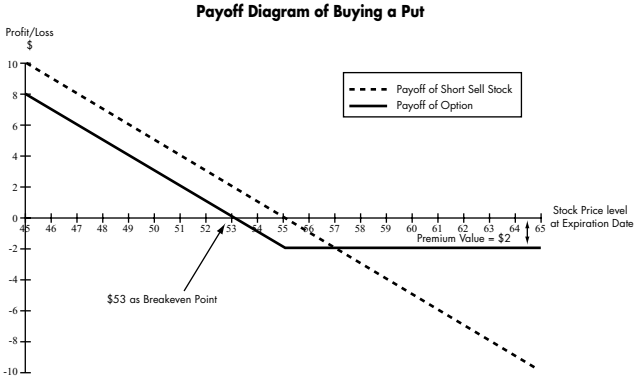
The current share price of XYZ is $55 in mid-September. You are pessimistic about it and you want to gain from the expected fall. You might buy an XYZ 55 Oct put at $2, obtaining the right to sell the share for $55. If the share price falls to $50, you can buy the shares for $50 in the market

and exercise the put to sell them for $55, thus making a profit of $5,000. After deducting the $2,000 premium, your net gain will be $3,000 or 150%.

Alternatively, you can sell the put which has now become in-the-money and could be trading at $6, receiving $6,000, thus making a profit of $4,000 or 200%.

If the market went against you and the share price rose to $60, and the XYZ 55 Oct put premium fell to $1 (although it could be less), you could still sell the put and reduce the loss to $1,000. The worst case is for the put to expire worthless and the maximum loss is the whole premium paid.

In this case, buying a put allows you to gain if the share price falls (prior to the option's expiration) and the maximum loss will be the premium paid.



Buy a put to protect an existing shareholding

You are holding a board lot of XYZ shares in mid-September at a market price of $55, which you have bought earlier and which is now showing a profit. Now you fear a fall in the share price but you do not want to sell the shares because, for example, you believe there may be further rises to come. To protect yourself on the downside, you can buy a put. Let's say you buy a XYZ Oct 55 put at $2. If the share price falls to $50, and at that time you are willing to sell the shares, you can exercise the put and sell the shares at $55. Deduct the $2 premium per share you paid for the put, and the effective selling price becomes $53. This compares with selling at the market price of $50.

If you still want to hold on to the shares, you can sell the now in-the-money put which might be trading at $6, i.e. $5 intrinsic value + $1 time value and receive $6,000. Minus the $2,000 premium, your net gain on the put is $4,000. This will reduce your $5,000 loss on the stock to $1,000.

If the share price does not fall but rises instead, you can still gain from the rise as you still own the shares. However, your gain on the shares will be reduced by the cost of the put premium.

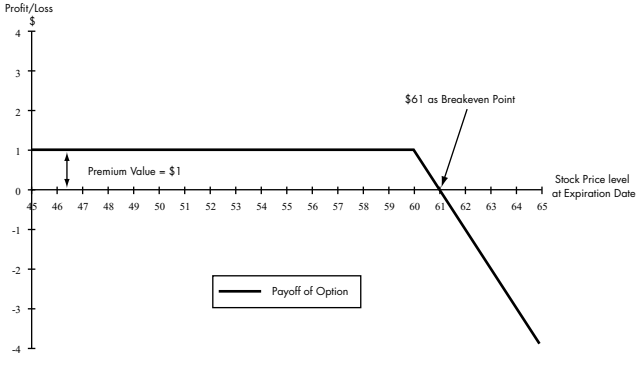
In this case, buying a put provides insurance to existing shareholding (prior to the option's expiration) while allowing the investors to gain from a rise in the share price.

Covered Call Writing

Write a call to enhance the income from an existing shareholding

You are holding 1,000 XYZ shares in mid-September at a market price of $55. You are short-term pessimistic but long-term optimistic about the stock, so you will not consider disposing of the shares. In this situation, you may consider writing a call, granting the right to someone to buy shares from you. Say you write an XYZ Oct 60 call for $1, receiving $1,000 in premium. If your expectation is right and the share price of XYZ does not reach $60 by the time it expires, you will take the $1,000 as your profit. However, the risk is that if the share price reaches $60 or beyond, you will be assigned. But since you have received $1 per share as premium, your effective selling price is $61. Therefore, only if the share price on expiry closes *higher* than $61 will this strategy prove worse than doing nothing at all.

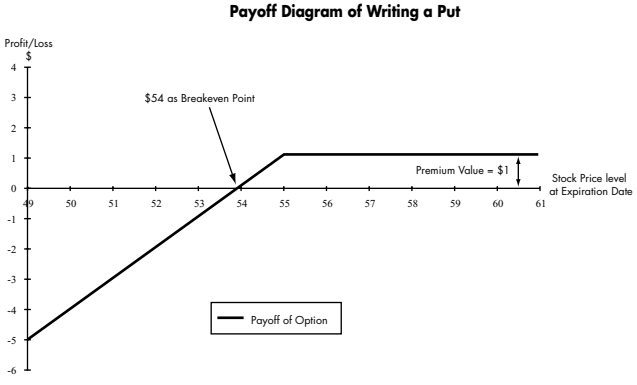
Payoff Diagram of Writing a Call



Put Writing

Write a put to acquire shares at a lower price

You are interested in buying 1,000 XYZ shares but think the share price in mid-September of $57 is too high. You would buy it if it fell to $55. Instead of waiting for the share price to fall to your desired level, you write an XYZ Oct 55 put at $1. This way, you earn $1,000 for taking on the risk of a put writer. If the share price does fall below $55, you may be assigned and able to buy the shares you want at a price you think reasonable. Moreover, you have earned $1 per share as the premium which reduces your entry price to $54.



If the share price rises after you have written the put and, by the time it expires, stays above the strike price, the put will not be exercised, and you would keep the $1,000 premium as your profit.

The risk is if the share price continues to fall below $55, you still need to buy the shares at $55 rather than at the lower market price. The difference between strike price and the lower market price (assuming you manage to sell the shares immediately at that market price) will be your loss, which could be large.

In this example, an important principle to observe when writing unhedged puts would be only to write puts on shares one is prepared ultimately to own.

“Combination” Strategies

There are many other option strategies which involve more complex profit and loss profiles than those described above. These generally require the trading of more than one option series at a time.

A “spread” is created where an investor has a long position in one series and simultaneously has a short position in a different series of the same class, but of the same option type (i.e. either put or call). For example, a position where you are long an XYZ September $50 call and short an XYZ September $55 call is known as a call spread. Although it contains a short position, the overall spread has a limited risk profit and loss profile. Spreads can be used to achieve many different objectives but they do carry their own special risks which are described in Section D.

A “straddle” is a position where you short (or long) both a call option and a put option at the same strike price and with the same expiry date. This is a more sophisticated strategy which benefits from a change in market volatility. It can also be extremely risky, particularly when a short straddle position is taken. A short straddle is only suitable for those who have looked carefully at the risks involved and are financially able to handle those risks. Again the reader is referred to Section D.

You should consult an Options Trading Exchange Participant or Options Broker Exchange Participant of HKEx to receive further advice on these and other strategies.

Also, many good books have been written about options trading and the pricing of options. Such books are widely available in Hong Kong.

D. THE RISKS OF EXCHANGE TRADED STOCK OPTIONS

This section deals with the special risks associated with traded stock options. More generic risks associated with dealing in securities in general are not covered here.

There is a wide range of option strategies available. The first thing investors should note is that some strategies may be suitable for them and some others may not. Investors should be selective in making their strategy decisions and think through the consequences before entering into any particular strategy, asking themselves the question: “What is the worst theoretical loss I might sustain? Can I afford to lose that much?”

It is commonly said that, for option holders, the risk is always limited while the risk for option *writers* can be unlimited. While this may be correct, the nature of risk in options trading should not be viewed simply in terms of “limited” versus “unlimited” risk. Buying options can lead to greater losses than writing them, and vice versa.

It is helpful to distinguish between the types of risks faced by option holders and option writers.

RISKS FACED BY OPTION HOLDERS

1. Option holders run the risk of losing the full value of the premium they paid for the option.

The only way an option holder can avoid losing the entire premium is to close out the long position before expiry or to exercise the option before or at expiry. Unlike stocks, there is a limited time period in which to operate. It is therefore important to note the time frame in which the option might possibly become profitable.

Of course, if the purpose of the option was to hedge an underlying stock position, this loss of premium may be something that is acceptable from the outset, being effectively the cost of insurance.

2. *The closer an out-of-the-money option is to expiry, the greater the likelihood that it will be impossible to close out or exercise profitably.*

Time is not on the side of the option holder. This is particularly the case with out-of-the-money options which might sometimes be tempting to buy because they look "cheap". Investors should accept the strong possibility that they may lose the entire premium paid. Many options might appear to be cheap for the good reason that they are actually very unlikely ever to become profitable. It is particularly important to be cautious if a large number of options are purchased in the hope of a leveraged profit.

3. *Stock options in Hong Kong are not always automatically exercised on expiry.*

In order to realise any profits from a long option position prior to or on the last trading day, it is necessary to instruct your broker to exercise or close out the option before or on the last trading day.

SEOCH does automatically exercise certain deep in-the-money options upon expiry, but your broker is able to override this automatic exercise function.

Your broker may not be under an obligation to inform you that an option is about to expire. If you forget to exercise and your broker does not alert you, you may forgo all the profit that would otherwise have been realised.

4. *If you exercise an option which is not hedged in the stock market you must be prepared to pay for the full value of the stock under the terms of the option contract (in the case of a call option) or to deliver stock (in the case of a put option).*

Unless you already have made arrangements to sell the stock immediately on receipt (in the case of a call option) or already hold the stock (in the case of a put option), you must ensure that you have the funds to meet your delivery obligations.

It may happen that you are unable to close an in-the-money option position before the expiry date and therefore the only

way of taking profits is by exercising. If you have entered into a highly leveraged position, it is possible that the quantity of stock to be transacted on exercise is greater than you would ever have intended to trade, which may have extremely serious consequences for your ability to complete the transaction and may result in significant losses.

5. Your broker may have the right to refuse to accept your exercise instruction.

In the previous example, your broker may demand that you deliver sufficient financial resources to make settlement in respect of an option position and may therefore refuse your exercise instruction until you have made the necessary payment. The result could be that you lose money or forgo profits.

6. You may be required to pay margin on an exercised option position.

Even if you are an option holder and therefore have not needed previously to pay margin on the long position, the margining system of the Clearing House can require margin to be paid on pending stock positions after exercise. This may happen if the underlying share price moves sufficiently following the exercise of the option so that the strike price is no longer in-the-money or is less deeply in-the-money than when it was exercised. This is different from the stock market where, ordinarily, one does not expect to pay margin prior to settling the stock transaction.

RISKS FACED BY OPTION WRITERS

7. The writers of call options are required to deliver stock on being assigned.

If a writer's call option is uncovered (i.e. the writer does not already hold the stock), this will require that the writer urgently obtain the stock either by buying it in the open market or borrowing it. In either case, the difference between the price at which the stock is acquired and the strike price of the assigned option may be substantial and will represent an outright loss. Of course if the stock is borrowed, the possibility exists of further losses.

The losses incurred may be greatly disproportionate to the premium income received from the writing of the call option.

8. The writers of put options are required to take delivery of and pay for stock on being assigned.

The writer of a put option, on being assigned, will be required to buy the stock at the strike price of that option. The writer may therefore be required to pay substantially more than the current market price for the stock, thus incurring significant losses, which may be greatly disproportionate to the income received when the put option was written.

9. Stock options are American style. Call writers and put writers may be assigned at any time.

Although it is generally more profitable to sell an option than to exercise it early, there are exceptions where option holders will exercise early. This can happen particularly around the time of a stock going ex-dividend or when liquidity in an in-the-money option series is such that holders find it difficult to sell their options for more than intrinsic value.

Writers must be constantly aware of the possibility of early exercise, and the funding that may be required to meet the delivery and settlement obligations, which will generally be significantly greater than the option's premium value.

10. All short option positions are subject to sudden increases in margin requirements.

The leveraged nature of options means that option values and hence margin requirements can increase dramatically over a very short period. Your broker is entitled to close out your position, and seize any other collateral to which he is legally entitled in the event that you are unable to meet the margin call.

11. Covered call writers lose the right to any upside in the stock price but remain exposed to losses in the event the stock price falls.

A covered call writer will not be exposed to losses in respect of the call option itself. The stock covers any risk of being assigned. However, the nature of this risk is that the writer cannot benefit from any upside for as long as the short call option position is open. Moreover, if the stock price falls, the writer will suffer losses offset only by the value of the premium received when the option was first written.

LEVERAGE

Most of the risk described above arises from the leveraged nature of options. The greatest danger of incurring serious losses lies in using leverage — trading in greater quantities of stock options than one would be willing to trade in the underlying stock itself.

A rule of thumb that could be followed by risk-averse options investors would be to avoid excessive leverage.

If your options strategy is to use the options market to express a view that you would otherwise have expressed in the stock market, then the least risky way to do this is to trade in the equivalent underlying quantity as if you were trading in the stock market itself.

OTHER GENERAL RISKS

12. It may not always be possible to liquidate an existing position.

For many reasons, an option series can become illiquid. If it does, it may become impossible to liquidate an open position and thus unexpected losses could be faced. Profits that had been anticipated may be impossible to realise if you cannot trade the option itself.

For example:

a) Trading in a particular underlying stock may be suspended or the whole market may be suspended (e.g. during a typhoon). In this case, all options on that stock will almost certainly be suspended at the same time. If the suspension continues over an expiry date, it may be necessary to deem the options to be cash settled.

b) Even in a less drastic situation where the option is not suspended, illiquidity may still occur. The option may still be trading but become illiquid through simple lack of investor interest. The implied volatility levels at which an option trades may quickly become so high or so low that even with a relatively stable share price, option prices fluctuate significantly. Your view of the “theoretical price” may not match the actual trading price. Sometimes an option may even trade at less than its intrinsic value.

c) Although the stock options market has a Market Maker system, there are a limited number of Market Makers and it is possible that a situation could arise where a Market Maker is not available or fails to meet its obligations.

d) It is possible that in very unusual circumstances a restriction could be placed on the opening of any new positions in a particular option class if the Clearing House felt this was in the best interests of the market. This may hinder one's ability to liquidate or hedge open positions.

Although the option may be difficult to trade in such circumstances, holders of in-the-money options can at least exercise and try to realise their profits that way. But it is worth repeating item 4 above that exercising the option may present problems of its own.

13. Stop loss orders may be ineffective. They may be harder to execute with stock options than with other exchange-traded products.

For the reasons noted above and because of the inherent volatility of option prices, it is important not to place too much reliance on the successful execution of stop-loss orders, if the failure of the stop-loss order to be executed would lead to your options exposure increasing to unmanageable levels.

14. Spread trades designed to limit risk may not always be as effective as intended.

Although spreads are attractive as a means of limiting options exposure, there are potential pitfalls. If one leg is assigned without there being an opportunity to exercise or liquidate the other, this can create delivery and settlement problems.

Or it may happen that it is difficult to close out both legs at the same time; if, for example, just the long leg is closed, the short will be left unhedged.

Moreover, the bid and offer spreads prevailing at the time the spread was entered into may be less favourable by the time you want to liquidate and so the strategy may be less effective than you had expected.

Finally, the dealing costs associated with trading options may make impractical a spread strategy that looks attractive in the textbook. Many strategies are not effective when the investor is paying all the dealing costs at the full rate or is only able to buy at the best offer and sell at the best bid.

15. Short straddles and strangles (i.e. the simultaneous writing of both puts and calls on the same underlying stock) may be difficult to liquidate, leaving the writer with excessive exposure.

If a straddle is to work well, it is often desirable to liquidate both positions at the same time. In a very volatile market and where it is difficult to liquidate the position, it is feasible that you could be assigned on both legs on separate occasions not only incurring significant trading losses but also creating large, unexpected and problematic settlement positions in the underlying stock.

16. When you trade options you are in a principal to principal contractual relationship with your broker which may leave you exposed in the event of the broker defaulting.

As with all dealing in securities there are risks associated with broker default. But when you have open option positions, the contractual relationship remains open throughout the option's life. In the event of a broker defaulting, the assets and open positions of clients, despite requirements that they be segregated from the broker's own assets and open positions, may be frozen or be otherwise inaccessible as a result of the default procedures. This may happen for a long enough period to prevent those positions from being liquidated and losses or forgone profit opportunities may then arise.

In the event of default by a broker which results in pecuniary loss to its client, the client has a right to claim under the Compensation Fund established under the Securities Ordinance, subject to the terms of the Compensation Fund from time to time. An Options Broker Exchange Participant who enters into transactions with clients, and effects matching transactions with an Options Trading Exchange Participant,

will not have a right to claim under the Compensation Fund in respect of any default of the Options Trading Exchange Participant.

17. Options exposure continues over time. Events may occur which need your immediate attention.

It is extremely important that you remain accessible to your broker while you have an open option position - particularly a short option position. Given the need for rapid action in the event, for example, of a margin call being made or a position being assigned, your broker may need your instructions at very short notice, otherwise he may be required to liquidate your positions and seize your collateral, giving rise to potentially large losses.

If you are likely to be out of contact, appropriate arrangements should be put in place such as pledging adequate collateral, leaving practical and executable instructions in relation to the open positions or closing out open positions.

18. Changes to option strike prices and contract sizes that arise from capital adjustments may be disadvantageous to the holders or writers of those options.

In most conventional capital adjustment cases, it is a relatively straightforward matter to ensure that the change to the options contract terms is fair. But there may be occasions when there is an extremely complex change to the capital structure of an underlying share that makes it impossible to render an adjustment that is perceived as fair by all participants. Such events are extremely rare in Hong Kong but they may occur.

It should also be noted that after adjustment, the adjusted series can sometimes become less liquid than before the adjustment.

E. HONG KONG EXCHANGES AND CLEARING LIMITED'S STOCK OPTIONS MARKET

TRADING SYSTEM AND PRODUCTS TRADED

In Hong Kong, options on individual shares are traded on HKEx. The options are traded through an automated electronic trading system and prevailing market prices for options are distributed digitally via information vendors and the HKEx Teletext system.

The stocks eligible for options will generally be those which are liquid, where there are a large number of shares in public hands and a large number of shareholders.

OPTIONS EXCHANGE PARTICIPANTS

Investors may trade options by opening an account with an Options Trading Exchange Participant or an Options Broker Exchange Participant. Options Trading Exchange Participants and Options Broker Exchange Participants are Exchange Participants who have been approved by HKEx to trade stock options. HKEx has regulations to help maintain professional standards amongst its Options Trading Exchange Participants and Options Broker Exchange Participants. One of these regulations is that the Options Trading Exchange Participant or the Options Broker Exchange Participant must have an Options Trading Officer or an Options Broker Officer, as applicable, or an Options Trading Representative or an Options Broker Representative, as applicable, who is qualified to give options-related advice to clients. You should ask to speak to an Options Trading Officer or Options Trading Representative of an Options Trading Exchange Participant or an Options Broker Officer or an Options Broker Representative of an Options Broker Exchange Participant if you wish to obtain more information about trading options.

Some Options Broker Exchange Participants may be restricted to carrying long option positions only. If you trade through these brokers, you will not be able to enter into short positions. Such Exchange Participants are obliged to inform you of any restriction of this nature.

SUMMARY OF THE STOCK OPTION CONTRACT SPECIFICATIONS

Subject	Specification
Option Types	Puts and calls.
Contract Size	In most cases, one board lot of the underlying shares which will differ from share to share.
Expiry Months	Five in total: the three nearest months as well as the following two quarterly expiry months i.e. options are available with maturity periods of 1, 2 and 3 months as well as up to 6 months and up to 9 months.
Trading Hours	Same as those of the underlying stocks.
Tick Size	Minimum price fluctuation of HK$0.01 for all options.
Last Trading Day	Business day immediately preceding the last business day of the expiry month.
Standard Strike Prices	Strike Price — Interval Between Strikes $0.10 to $2: $ 0.10 * $2 to $5: $ 0.20 $5 to $10: $ 0.50 $10 to $20: $ 1.00 $20 to $50: $ 2.00 $50 to $200: $ 5.00 $200 to $300: $ 10.00 $300 to $500: $ 20.00 * i.e. possible strike prices are 0.10, 0.20, ..., 1.80, 1.90, 2.00
Introduction of New Series	There will always be at least 5 strike prices for each expiry month with new strikes being introduced, if necessary daily, so as to ensure that there are always at least two series out- of-the-money, one series at-the-money and two series in-the-money for each type (call or put).
Exercise Style	American with physical delivery. Same day purchase and exercise permitted. Exercise on last trading day allowed.
Assignment Method	Random assignment.

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