

Warrants

A warrant is a derivative. It gives the buyer the right to buy or sell the underlying asset at a set price within a certain time. The underlying asset can be stock, market index, currency or commodity.

Some Hong Kong investors like warrants, as they can make big gains with a small investment. This is because it's cheaper to buy warrants than investing in the underlying assets. After working out which way the price of the assets will move, you choose a suitable warrant. If you are right, you will profit.

The structure, pricing and the way warrants work are complicated. The risk of investing in warrants is also high. So, it's not suitable for inexperienced investors, or people who are less risk tolerant, such as retirees.

ABC of warrants

Basics of Warrants

Warrants are a popular investment product in Hong Kong. However, to some retail investors, there is a misconception that warrants are just like stocks. They fail to realise that warrants, as derivatives, are more complicated than stocks in nature.

So, what are warrants?

Warrants are an instrument which gives investors the right - but not the obligation - to buy or sell the underlying asset (e.g. a stock) at a pre-set price on or before a specified date.

I only need to know which company a share represents. What else should I know about warrants?

Compared with stocks, warrants have more attributes which include:

- **Issuer:** A warrant can be issued by a listed company (i.e. subscription warrant) or a third party such as a financial institution (i.e. derivative warrant).
- **Underlying asset:** It can be a single stock, a basket of stocks, an index, a currency, a commodity, a futures contract (e.g. oil futures) etc.
- **Types of embedded rights:** Don't mix up a call warrant with a put warrant. A call warrant gives you the right to buy whereas a put warrant gives you the right to sell the underlying asset.
- **Exercise price:** The price at which you buy or sell the underlying asset in exercising a warrant.
- **Conversion ratio:** This refers to the number of units of the underlying asset exchanged when exercising a unit of a warrant. Normally, in Hong Kong a derivative warrant on shares has the ratio of 1 (i.e. one warrant for one share) or 10 (i.e. 10 warrants for one share).
- **Expiry date:** The date on which a warrant will expire and become worthless if the warrant is not exercised.
- **Exercise style:** With an American warrant, you can exercise to buy/sell the underlying asset on or before the expiry date. Whereas a European warrant allows exercise on the expiry date only.
- **Settlement:** A warrant can be settled by cash or physical delivery upon exercise.

Some warrants have more sophisticated features and are generally referred to as exotic warrants.

Are there any examples?

Suppose there are two warrants, A and B, which have the same underlying stock C and an exercise price of \$1:

Warrant name	Warrant type	Conversion ratio	Expiry date	Exercise style	Settlement
A	Call	10	5 July 2006	American	Physical
B	Put	1	8 May 2006	European	Cash

Warrant A gives you the right to buy one share of stock C at \$1 for every 10 warrants you hold on or before 5 July 2006. If you exercise the warrant, you will receive physical shares of stock C.

On the other hand, warrant B gives you the right to sell one share of stock C at \$1 for every one warrant you hold on 8 May 2006. If you exercise the warrant, you may receive either a cash amount or nothing depending on the level of the underlying share price around the expiry date.

There are so many warrants available in the market. How can I distinguish them?

There are two main types of warrants: subscription warrants and derivative warrants, which are subject to different provisions of the Listing Rules in Hong Kong.

Subscription warrants are issued by a listed company and give holders the rights to buy the underlying shares of the company. They are either attached to new shares sold in initial public offerings, or distributed together with declared dividends, bonus shares or rights issues. Subscription warrants are valid between 1 and 5 years. Upon exercise, the underlying company will issue new shares and deliver them to the warrant holders.

Derivative warrants are issued by financial institutions. Unlike subscription warrants which must be call warrants, derivative warrants can be call or put warrants. Most of the derivative warrants in the market have a shorter life, ranging from 6 months to 2 years normally, although the current Listing Rules allow a maximum life of 5 years.

Derivative warrants can be linked with a single stock, a basket of stocks, an index, a currency, a commodity or a futures contract (e.g. oil futures). They can be settled by cash or physical delivery, which must be specified by the issuers at launch. However, basket 1, index warrants and warrants on stocks listed overseas are settled by cash only.

In exercising a call derivative warrant on a single stock with physical settlement, the issuer will deliver the underlying shares to the warrant holder. This does not involve the issuance of new shares by the underlying listed company as in the case of subscription warrants.

Furthermore, every derivative warrant has a designated liquidity provider to help improve the liquidity of the instrument in the market. Such a requirement does not apply to subscription warrants.

What are the differences in trading warrants as compared with stocks, options and futures?

When you buy stocks, you become a shareholder, and have the right to vote at the general meetings and receive declared dividends and bonus shares. If you hold warrants, you normally do not have such rights. Besides, warrants have a restricted life, and once the exercise period lapses, they become worthless.

Conceptually, warrants are a special form of options. You can only take a long (buy) position in trading warrants. However, you can long or short (write) an options contract. Same as warrant holders, options buyers only face the risk of losing all the upfront capital invested if they let the options expire. Options writers, however, are more passive and must meet the obligations arising from buyers exercising the options. In return for the unlimited downside risk, writers are paid a premium by option holders.

If you trade futures, you still need to meet the obligations when the underlying asset price moves against your view. Theoretically, your losses are unlimited under that situation. Should you hold warrants, you can simply choose not to exercise and your loss will be limited to the amount of your original investment.

That's great. Shall I start trading warrants?

These are only the basics. There is still a lot about trading know-how, which you have to learn. It is also essential to read the listing document to understand a warrant's terms. Find out more in the next few articles.

After all, warrants are complicated, high-risk instruments suitable only for those who are able to grasp the product features and take the risks. If in doubt, stay out.

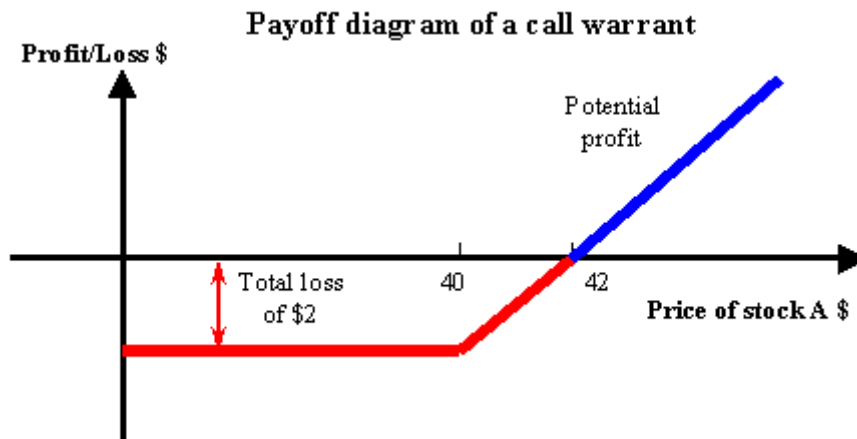
Pricing warrants

Warrants can be classified into call and put. A bullish investor may buy a call warrant to benefit from upward share price movements, while a bearish investor may buy a put warrant to capitalise on downward share price movements. A risk-averse investor may buy a put warrant to hedge against the downside risk of the underlying asset he holds.

Sounds great. What are the payoffs of buying a warrant?

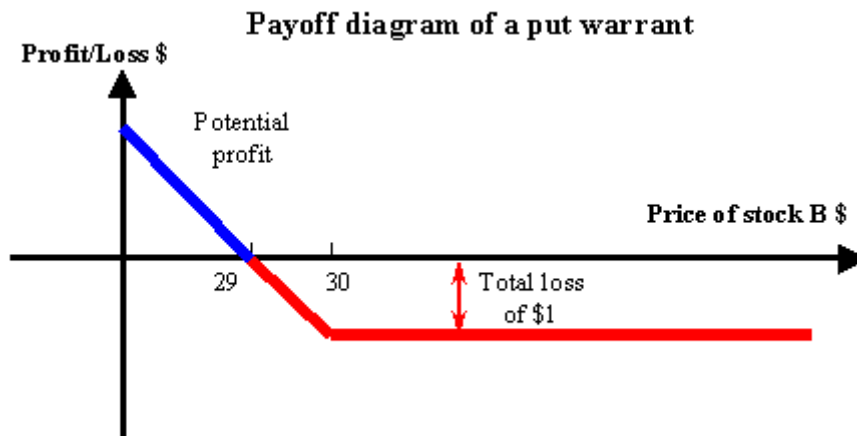
Call warrants give you the right to buy a given amount of the underlying asset at a predetermined exercise price within a certain period.

Suppose you buy a call warrant at \$2, with stock A as the underlying asset and an exercise price of \$40. If the price of stock A is above \$42 (the breakeven point) on the expiry date, you can make a potential profit as illustrated in the following diagram. The higher the stock price, the higher your return. However, if the stock price lies between \$40 and \$42, you can still exercise the warrant, but at a loss after deducting the warrant price. If the stock price is at or below \$40 (i.e. out-of-the-money), it will not be worthwhile to exercise your warrant. In such a case, your initial outlay in the warrant is entirely lost!



Put warrants give you the right to sell a given amount of the underlying asset at a predetermined exercise price within a certain period.

Suppose you buy a put warrant at \$1, with underlying stock B and exercise price of \$30. If the price of stock B is below \$29 (the breakeven point) on the expiry date, you can make a potential profit as illustrated on the following diagram. The lower the stock price, the higher your return. But, if the stock price lies between \$29 and \$30, you can still exercise the warrant, but at a loss after deducting the warrant price. If the stock price is at or above \$30, you will not exercise the out-of-the-money warrant and face a loss equal to its purchase price!



Remember, even though the potential gain of buying a warrant can be substantial, your warrant can become worthless if on the expiry day, it is out-of-the-money and is not worth exercising.

What determines the price of a warrant?

A derivative warrant's relationship with its underlying asset is not simply one-to-one. Based on the option pricing theory, apart from the exercise price, there are five factors affecting the theoretical price of a warrant: the underlying asset price, expected volatility of the underlying asset price, time to expiry, interest rate and dividends expected to be paid by the underlying asset. Assuming other factors remain constant, the theoretical impact of changes in each factor on both call and put warrants is illustrated below:

Factor	Call warrant price	Put warrant price
Underlying asset price ↑	↑	↓
Underlying volatility ↑	↑	↑
Time to expiry ↓	↓	↓
Interest rate ↑	↑	↓
Expected dividends ↑	↓	↑

Note: ↑ increase; ↓ decrease, assuming other factors remain unchanged

Call and put warrants react in an opposite way to changes in their underlying asset price. When the underlying asset price goes up, a call warrant's price will go up but a put warrant's price will fall. For both call and put warrants, the higher the expected volatility of the underlying asset price, the higher the warrant price. Both call and put warrants lose their value as time passes by. Finally, changes in interest rate and expected dividends will have different impacts on the prices of call and put warrants.

The above factors altogether determine the "theoretical" price of a warrant. However, the warrant may not be traded at that price. The "market" price may move away from the theoretical price, depending on the short-term demand for and supply of that warrant (e.g. number of that warrant outstanding in the market, availability of other warrants with the same underlying asset) and other factors such as the creditworthiness of the warrant issuer.

Given there are many other factors affecting warrant prices, you should bear in mind that warrant prices do not simply go up even if the underlying asset prices move in the right direction. The price movement of a warrant may not be proportionate, or may even be opposite, to the price movement of the underlying asset. For example, warrants' implied volatility, the number of outstanding warrants in the market, and supply of other warrants with the same underlying asset may affect the price of a warrant.

Jargons

The universe of warrants has its own jargons. Make sure that you understand these jargons before choosing a warrant.

What warrant jargons should I know? What do they mean?

A call or put warrant is regarded as *in-the-money*, *out-of-the-money* or *at-the-money* depending on the following circumstances:

	Call warrant	Put warrant
Underlying price > Exercise price	In-the-money	Out-of-the-money
Underlying price < Exercise price	Out-of-the-money	In-the-money
Underlying price = Exercise price	At-the-money	At-the-money

Intrinsic value: The difference between the underlying asset price and the exercise price of a warrant. Only in-the-money warrants have positive *intrinsic value*. Both out-of-the-money and at-the-money warrants have *zero intrinsic value*. The following table illustrates the *intrinsic value* of a call or put warrant in different scenarios.

	Intrinsic value	
	Call warrant	Put warrant
Underlying price (P_U) > Exercise price (P_E)	$P_U - P_E$	0
Underlying price (P_U) < Exercise price (P_E)	0	$P_E - P_U$
Underlying price (P_U) = Exercise price (P_E)	0	0

Time value: The amount the warrant price exceeds the intrinsic value:

$$\text{Time value} = (\text{Warrant price} \times \text{Conversion ratio}) - \text{Intrinsic value}$$

The following hypothetical example illustrates the calculation of the time value of call warrant A and put warrant B on the same underlying asset with a price of \$8:

	Call warrant A	Put warrant B
Exercise price	\$9	\$8.5
Warrant price	\$1	\$0.21
Conversion ratio	1	10
Intrinsic value	\$0 ($\because P_U < P_E$)	\$0.5 (= \$8.5 - \$8)
Time value	\$1 (= \$1 x 1 - \$0)	\$1.6 [(\$0.21 x 10) - \$0.5]

For both out-of-the-money and at-the-money warrants, the warrant price is equal to the time value because the intrinsic value for each is zero. The time value of a warrant will decay over time and fall to zero on expiration.

Premium: Usually expressed as a percentage, indicates how much extra an investor is paying to buy the warrant instead of buying or selling the underlying asset directly:

$$\text{Premium for a call warrant} = \{[(\text{Exercise Price} + (\text{Warrant Price} \times \text{Conversion Ratio})) / \text{Underlying Price}] - 1\} \times 100\%$$

$$\text{Premium for a put warrant} = \{1 - [(\text{Exercise Price} - (\text{Warrant Price} \times \text{Conversion Ratio})) / \text{Underlying Price}]\} \times 100\%$$

Therefore, for the above example,

$$\text{Premium for call warrant A} = \{[(\$9 + (\$1 \times 1)) / 8] - 1\} \times 100\% = 25\%$$

$$\text{Premium for put warrant B} = \{1 - [(\$8.5 - (\$0.21 \times 10)) / 8]\} \times 100\% = 20\%$$

However, the premium does not tell you whether a warrant is expensive or inexpensive. Whether a warrant is expensive or inexpensive depends on its "implied volatility" (see below).

Delta: Measures the expected change in the theoretical warrant price with respect to a change in underlying asset price. Call warrants have positive delta, while put warrants have negative delta.

$$\text{Delta} = \text{Change in (Warrant price} \times \text{Conversion ratio)} / \text{Change in Underlying price}$$

For example, suppose call warrant A and put warrant B have a delta value of 0.45 and -0.6 respectively. That means for every \$1 increase (decrease) in the underlying asset price, theoretically, the price of call warrant A is expected to rise (drop) by \$0.45, while the price of put warrant B is expected to drop (rise) by \$0.6.

Delta is an important parameter for conducting hedging activities. When hedging, remember that the delta value may change as the underlying asset price changes.

Gearing: Simple gearing measures how many times the underlying asset costs more than the warrant you buy by comparing the value of the underlying asset to that of the warrant:

$$\text{Simple gearing} = \text{Underlying price} / (\text{Warrant price} \times \text{Conversion ratio}), \text{ thus}$$

$$\text{Simple gearing for call warrant A} = \$8 / (\$1 \times 1) = 8 \text{ times}$$

$$\text{Simple gearing for put warrant B} = \$8 / (\$0.21 \times 10) = 3.8 \text{ times}$$

That means you pay only \$1 for call warrant A to participate in the price movement of an underlying asset which costs \$8, or 8 times more. Similarly, you pay \$2.1 for 10 units of put warrant B to gain exposure to the underlying asset, which costs \$8, or 3.8 times.

Effective gearing measures the expected rate of change in the theoretical warrant price with respect to a 1% change in the underlying asset price:

Effective gearing = Simple gearing x Delta, thus

Effective gearing of call warrant A = $8 \times 0.45 = 3.6$

Effective gearing of put warrant B = $3.8 \times -0.6 = -2.28$

That means that for every 1% movement in the underlying asset price, theoretically, the price of call warrant A is expected to move by 3.6% in the same direction, while the price of put warrant B is expected to move by 2.28% in the opposite direction.

Gearing works both ways. Although higher gearing may give you higher returns, it also exposes you to higher downside risk. Also keep in mind that the level of gearing may change as the underlying asset price changes.

Implied volatility: A very important parameter for evaluating whether a warrant is expensive or inexpensive, similar to the P/E ratio used in rating a stock. As mentioned earlier, the expected volatility of the underlying asset price is among the five factors affecting warrant price. Assuming other factors remain unchanged, the higher the volatility, the higher the warrant price. It is then possible to work backwards through a certain option pricing model to calculate a figure for volatility implied by the market price of the warrant, i.e. implied volatility.

To evaluate whether a stock is expensive or not, we usually use its P/E ratio as a quick reference, not its share price. Similarly, *to assess whether a warrant is expensive, we use implied volatility, not warrant price and premium.* This is because the warrant price and premium are determined by a number of factors, such as the exercise price and time to expiry. For warrants on the same underlying asset, the higher the implied volatility, the more expensive the warrant.

That said, while choosing a warrant with an attractive price is important, make sure the warrant you select matches your investment strategy. Also, selecting a warrant with a "reasonable" rather than a "cheap" price is most important. Always remember to exercise your own judgement: Is a higher implied volatility reasonable? Is a cheap warrant really worth buying?

Liquidity provider

Under the Listing Rules, an issuer is required to appoint a liquidity provider to provide liquidity for every derivative warrant it issues.

How does a liquidity provider work?

A liquidity provider can provide liquidity for a warrant either by active quotes or quote request.

Active quotes:

Starting from 31 December 2012, all warrant issuers implement active quotes standards under which liquidity providers provide liquidity for certain derivative warrants by actively inputting orders into the Exchange's trading system.

However, active quotes may not strictly be "continuous" because liquidity providers may need to pause the provision of active quotes for a reasonably short period of time to adjust quote parameters in response to market conditions or operational needs.

Roughly speaking, the liquidity provider should provide active quotes for at least 90% of the time of a trading day for warrants that meet the criteria for active quotes. Each pause to provide liquidity should not exceed 10 minutes.

Active quotes only apply to warrants that satisfy the following criteria (as measured on a real time basis):

- an active underlying (i.e. local indices and stocks listed on the Exchange which are eligible for CBBC issuance, representing stocks with the highest turnover in the market);
- 50% or less of their aggregate number outstanding in the market;
- remaining time to expiry of at least one month; and
- moneyness between 20% in-the-money and 20% out-of-the-money. "Moneyness" is derived by comparing the spot price or level of the underlying and the exercise price or strike level. You may check out more details from the [Industry Principles on Liquidity Provision for Listed Structured Products](#).

If you want to know whether a particular warrant is eligible for active quotes at any particular time on a trading day, you may contact the issuer to ask if such warrant meets the above criteria.

Quote request:

The liquidity provider provides quotes by responding to requests for quotes, according to the committed service level set out in the relevant listing document. These standards typically include:

- the maximum response time- i.e. the maximum time it will take to submit a pair of quotes after a request is received;
- the maximum spread between the bid and ask price;
- the minimum quote size; and
- situations in which a quote will not be provided.

You can call for a quote via your broker at the phone number displayed on the designated page of the warrant, the HKEx website and the listing document.

Who can be a liquidity provider?

A liquidity provider must be an [Exchange Participant](#), but needs not be part of the issuer's group of companies. An issuer can appoint different liquidity providers for different derivative warrants it issues. A liquidity provider can serve more than one warrants issued by the same or different issuers. However, each warrant can only have one liquidity provider.

To help distinguish its liquidity providing activities from other agency trading, each liquidity provider is assigned a unique Broker ID 95XX or 96XX. A liquidity provider uses the same Broker ID for all derivative warrants it supports.

To ensure market liquidity is not affected should the liquidity provider fail to perform its functions, an issuer may appoint a back up liquidity provider for contingency purposes.

How do liquidity providers fulfil their obligations?

A liquidity provider's obligations are specified in the respective listing documents. Starting from 31 December 2012, all warrant issuers also implement active quote liquidity in accordance with the Industry Principles.

However, there are certain circumstances specified by the issuer in the listing document under which it can suspend its obligation to provide liquidity. Examples include:

- the warrant or the underlying asset is suspended from trading for any reason;
- when there are operational and technical problems beyond the control of the liquidity provider that hinder the liquidity provider's ability to provide liquidity;
- if there is a "fast market" (i.e. situations where the financial markets experience exceptional price movement and high volatility over relatively short periods of time leading to a sudden increase in risk and uncertainty) which materially affects the issuer's hedging ability;
- if the theoretical value of the warrant is less than HK\$0.01;

- where the underlying asset is an index, if there occurs or exists any suspension of, or limitation imposed on, trading of options or futures contracts relating to the index or if the index level is not calculated or published as scheduled for any reason; or
- when there is no warrant available for market making activities;

As the circumstances may vary for different derivative warrants, it is important to read the listing document carefully.

Also the liquidity provider is not obliged to provide quote during a pre-opening session or a closing auction session (if applicable) and during the first 5 minutes of each morning session or the first 5 minutes after trading commences for the first time on a trading day.

Although liquidity providers are obliged to provide quotes, this does not imply that they must take up all the outstanding orders in the market. Liquidity providers can provide quotes at the price level they deem fair provided they comply with the maximum spread requirement in the listing document. Therefore, there are chances that their quotes cannot match with your expected price levels and leave your orders unexecuted.

Who evaluates the performance of a liquidity provider?

The Stock Exchange evaluates the performance of liquidity providers. In case of any non-compliance with the obligations as set out in the listing document, the Stock Exchange may suspend the issuer from further issuance of derivative warrants or require the issuer to find another liquidity provider within a prescribed time period.

Besides, liquidity providers have to comply with the relevant securities regulations.

However, don't misunderstand the role of liquidity providers. Liquidity providers are only required to ensure some minimal liquidity in the market as and when it is needed. They are obliged to provide quotes on a limited scale usually after considering the supply and demand situation at the time.

As an investor, before you buy a warrant, it is in your best interest to also check out the performance of a liquidity provider. For instance, find out whether it always provides quotes with narrow spreads; how quickly it responds to quote requests and when it acts as the liquidity provider for another warrant, whether its level of service is consistent over the life of that warrant.

To understand more about derivative warrants listed in Hong Kong, please refer to the [frequently asked questions](#) (FAQ) posted on individual issuers' websites or the HKEx website.

FAQs

The following Q&As using fictitious names for a warrant and its underlying stock and figures explain how "dividends expected to be paid by the underlying stock" affect a warrant's price.

- I bought call warrant A linked to the underlying stock B with an expiry date of late April. Why did call warrant A trade below its intrinsic value with a negative premium of 1% in mid-March?

This seemed unreasonable as the warrant price should at least equal its intrinsic value, i.e. the excess of the prevailing market price of the underlying stock B over the exercise price of call warrant A.

While there is nothing wrong with the aforesaid definition of intrinsic value and in most cases derivative warrants do trade above this "intrinsic value", this does not mean that this intrinsic value must be the minimum value of a derivative warrant. As explained below, it is possible for a derivative warrant to trade below this "intrinsic value".

Holding a call warrant differs from holding the underlying stock, especially since the holders of the call warrant are not entitled to receive any dividends that might be declared by the underlying stock. In this particular case, it was noticed that the underlying stock B was due to announce its annual results in late

March. Based on previous practices, stock B would likely go ex-dividend in mid-April. With an expiry date for call warrant A of late April, the market price of stock B used would be the ex-dividend price in determining the payout of call warrant A on this expiry date. This would result in a lower payout to call warrant holders than it otherwise should. Although the final dividend that stock B would declare was still unknown in mid-March, it was widely anticipated that the dividend would be no less than \$1.5. It was not unreasonable for potential investors and the liquidity provider to deduct the dividend element when pricing call warrant A.

- If so, how would the price of call warrant A change on the dividend announcement date and on the ex-dividend date of stock B?

Assuming other factors remain constant, if the amount of the declared dividend was in line with what the market expected, there would be no change in the market price of call warrant A on either the dividend announcement date or the ex-dividend date of stock B, because the dividend element had already been priced into call warrant A.

- What if stock B eventually declared a dividend lower than expected? How about if the declared dividend is larger than expected?

If the liquidity provider used \$1.5 as the dividend discount factor to price call warrant A and stock B eventually declared a dividend lower than expected, investors who bought call warrant A at a cheaper price would gain as the price of warrant A would be expected to move up, assuming other factors remain constant. The liquidity provider who sold the warrant at the discounted price might lose.

On the other hand, if stock B declared a larger dividend than expected, the price of warrant A would be expected to drop further, assuming other factors remain unchanged. Accordingly, investors who bought warrant A would lose.

- Why don't all derivative warrants reflect the negative impact of the dividend discount, and thus trade with a negative premium? When would this factor become apparent?

Generally speaking, at the time of launch, a derivative warrant is normally issued at a significant premium to reflect the time value of the warrant. The small negative impact of the dividend discount is embedded in the premium and may not be easily noticeable. In this particular case, since call warrant A was about to expire in late April, its remaining time value had diminished to such an extent that the negative effect of the expected dividend payment became visible, as reflected by the negative premium.

- Why was the negative impact of the dividend discount not visible for comparable options on stock B trading on the Stock Exchange of Hong Kong (SEHK)?

While stock options are similar to derivative warrants in many aspects, there are some key differences that might lead to significant price differences. In particular, stock options listed on the SEHK are American style, which means that they can be exercised on or before the expiry date. Derivative warrants listed on the SEHK (e.g. call warrant A) are European style, which means they can be exercised only on the expiry date. Because of this feature, a call stock option holder can exercise the option before expiry to receive the underlying stock before the ex-dividend date. Thus, in practice, a stock option should not be affected by dividend payments and should therefore trade above its intrinsic value all the time.

- So, does it mean that stock options are better than derivative warrants?

Both European style and American style options (including warrants which are a kind of option) exist in the market and they serve different purposes. It is hard to say which style is necessarily better than the other. More importantly, investors should understand what they are buying and should not confuse the

two different kinds of product, as each has its own characteristics. As a side issue, assuming all other things equal, it is generally true that a European style option is cheaper than an American style option.

Finding information

How can I know the features of a derivative warrant in details?

In general, the short name of a warrant quoted on its designated page indicates the basic features of the warrant. As illustrated in the example below, the derivative warrant cited is an European (E) put (P) warrant on CDE stock issued by AB Company with an expiry date of May 2006 (0605) and settlement in cash (@). The last letter "A" differentiates this warrant from other warrants with the same underlying asset and expiry date issued by the same issuer.

To know in detail the features of a warrant, you can refer to its listing document. The supplemental listing document carries specific information about a warrant's features and terms. On the other hand, information about the background and financial strength of the issuer or the guarantor (if there is one) can be found in the base listing document.

You can find these two listing documents on the website of Hong Kong Exchanges and Clearing Limited (HKEx). Some issuers also post listing documents on their websites.

To understand more about derivative warrants listed in Hong Kong, please refer to the [frequently asked questions](#) (FAQ) posted on individual issuers' websites or the HKEx website.

What other information on warrants can I find on the HKEx website?

There is a variety of information on it, such as:

Daily trading summaries: These give you a complete picture of trading activities carried out by issuers and their group companies in their respective derivative warrants on each day. Figures include number of warrants bought/sold, average price per warrant bought/sold, as well as number of warrants and percentage of an issue outstanding in the market.

Pre-listing trading summaries: On the first day of listing of a derivative warrant, the issuer needs to submit a report to the Stock Exchange about its dealings in that warrant in the grey market by itself and its group companies. Such trading information is available in this section.

Trading arrangement announcements: You can look up announcements on new listings, last day of dealings, withdrawal of listings and further issuance of warrants.

Liquidity provider information: Every derivative warrant has a designated liquidity provider to help improve liquidity. You can find information on the liquidity provider for each warrant, including its name, broker number and telephone number for making a quote request.

Choosing a warrant

Stock investing is rather straightforward. In most cases, there is normally one class of shares for each listed company. You choose a company and then buy its shares. That's it.

The story becomes intricate when you choose warrants. There can be a series of warrants on the same underlying asset, which may be provided by different issuers and carry different terms.

What is the ABC of warrant trading?

Step 1: Choose the underlying asset

The underlying asset of a derivative warrant can be a single stock, a basket of stocks, an index, a currency, a commodity, a futures contract (e.g. oil futures) etc. Presumably, you should only be interested in something that you know well.

Step 2: Take a view on the future price movement of the underlying asset

Do you expect the underlying asset price to go up or down? To what extent? In short term or long term? Will the future price movement affect you? Remember, a warrant is only a tool for you to benefit or avoid losses if your expectation on the future price movement of the underlying asset comes true.

Step 3: Choose an appropriate warrant to match your strategy

Take a look of the existing warrants on the underlying asset you select. Make sure that the warrants you pick match your view on the future price movement of the underlying asset. Choose call warrants if you believe the underlying asset price will go up, and pick put warrants if you think the price will fall. To hedge against the downside risk of an underlying asset that you hold, choose put warrants.

After figuring out the direction, screen out those warrants with the appropriate exercise price and time to expiry to match your expectations on the magnitude and timing of the price movement. For example, you may consider choosing warrants with a longer time to expiry if you don't expect a significant price movement in short term.

Step 4: Compare implied volatility to look for cheaper warrants

To evaluate whether a warrant is expensive or cheap, you should focus on its implied volatility, not on the warrant price and premium. The implied volatility of a warrant enables you to assess the relative expensiveness of a warrant. This is particularly useful if you are trying to compare warrants of different terms. In general, among different warrants on the same underlying asset, a warrant with a lower implied volatility is relatively cheaper. Many newspapers, financial websites, information vendors and warrant issuers carry information on implied volatility of individual warrants for investors' reference.

Implied volatility is not a constant. Changes in implied volatility could sometimes overshadow changes in the underlying asset price, particularly if the movement of the underlying asset price is very small. A drop in the implied volatility of a highly priced call warrant might offset the expected rise in the warrant price due to a rise in the underlying asset price, or even cause a drop in the warrant price. The following hypothetical example regarding a call warrant A helps to illustrate what might happen if the implied volatility of a warrant drops vis-a-vis a rise in the underlying asset price. Although the underlying asset price rises from \$4 to \$4.2, the price of warrant A drops from \$0.8 to \$0.75 mainly because the implied volatility decreases from 43% to 36%.

Day	Underlying asset price	Implied volatility	Theoretical price of warrant A assuming no change in implied volatility	Theoretical price of warrant A assuming no change in underlying asset	Market price of warrant A
1	\$4	43%	\$0.8	\$0.8	\$0.8
2	\$4.2	36%	\$0.9	\$0.65	\$0.75

Clearly, a highly priced warrant is more vulnerable to a downward adjustment in its implied volatility. As such, comparing implied volatility of various warrants helps you make a better decision in choosing warrants.

Can I use premium to find out cheaper warrants?

Some people prefer using premium as their benchmark for choosing a warrant. This could be misconceived. While premium is easier to be calculated and would give a sense of the expensiveness of a warrant, it is not designed for comparing warrants of different terms.

In general, an in-the-money warrant usually has a lower premium while an out-of-the-money warrant usually commands a higher premium. This is because of the gearing factor. Besides, a warrant with a longer time to

expiry usually commands a higher premium than a warrant with a shorter life. If you want to compare warrants of different exercise prices and time to expiry, you might be at a crossroad to assess which one is cheaper.

For example, suppose that the following hypothetical call warrants B and C have the same underlying stock with different exercise prices and time to expiry. Although warrant B appears to have a lower premium than warrant C, but it does not mean warrant B is necessarily cheaper. In terms of implied volatility, warrant C is cheaper than warrant B.

Warrant name	Warrant price	Exercise price	Months to expiry	Premium*	Implied volatility
B	\$2.2	\$17	2	20%	25%
C	\$1.68	\$18	4	23%	21%

* Assuming the underlying stock price is \$16 and the conversion ratio is 1.

What else to consider?

After all, given there may be warrants of different structures being offered on the same underlying asset, while choosing a reasonably priced warrant is important, you need to ensure that the warrant you choose also satisfies the direction (i.e. call or put), time to expiry, exercise price and effective gearing criteria. You should also take into account the reputation of the warrant issuer and how liquidity is provided (e.g. whether quotes with narrow spreads are always provided? How responsive to quote requests?) Always remember to exercise your own judgement: Whether a higher implied volatility is justifiable? Whether a cheap warrant is really worth buying?

Things to note

Key Messages:

- An actively traded warrant may not necessarily be a good buy and cheaper short-dated and deeply out-of-the-money warrants may not closely track movements in the price of the underlying asset.
- You should be aware of the credit worthiness of a warrant issuer. If the issuer becomes insolvent and defaults on its warrants, you will be considered as an unsecured creditor and will have no preferential claims to any assets held by the issuer.



Having walked through the four steps for choosing an appropriate warrant to match your strategy, you should also bear in mind the following key issues.

Credit worthiness of warrant issuers: Uncollateralised structured products such as warrants are not asset backed. In the event that a warrant issuer becomes insolvent and defaults on its warrants, investors will be considered as unsecured creditors and will have no preferential claims to any assets held by the issuer. Disclosure of issuers' credit risk and credit worthiness can be found in issuers' listing documents posted on the [HKExnews website](#). Credit ratings of issuers are available on the [HKEx website](#). If an issuer suffers a credit downgrade, it will be required to publish an announcement on the HKExnews website.

Hot warrants may not be good buys: Informed investment decisions should be based on the pricing, such as implied volatility and spread, and the terms of a warrant, rather than on any short-term active trading activities. In particular, high turnover on a low number of warrants outstanding in the market casts doubt on the true popularity of that warrant. You should also be able to distinguish buying and selling orders from the liquidity provider and other market participants. An actively traded warrant is not necessarily a good buy. Instead, you should compare the implied volatility of different warrants on the same underlying asset to identify less expensive ones. In general, a warrant with a lower implied volatility is relatively cheaper.

Be wary of short-dated out-of-the-money warrants: Some investors like to speculate on short-dated out-of-the-money warrants, probably because of their low prices and high gearing ratios. Unlike stocks, warrants have a limited life and their time value reduces quickly towards their expiry date. In addition, deeply

out-of-the-money warrants are less sensitive to movements in the price of the underlying asset because such warrants are unlikely to become in-the-money on expiry. Therefore, the prices of short-dated and deeply out-of-the-money warrants may not closely correspond to movements in the price of the underlying asset (e.g. a call warrant's price may not go up even if the price of the underlying asset rises).

Leverage can hurt: A prime attraction of warrants is that they offer exposure to the underlying asset at a lower cost. Some investors tend to invest in high gearing warrants to leverage up changes in the price of the underlying asset. However, this gearing effect can work in reverse. A small change in the price of the underlying asset can lead to a substantial decline in the warrant price. Usually, in-the-money warrants offer low gearing, while out-of-the-money warrants provide high gearing. Make sure that the warrant you choose corresponds with your risk tolerance level. Remember, even though the potential gain of buying a warrant can be substantial, you can still lose your entire capital if the warrant remains out-of-the-money on expiry.

Gearing ratio can't predict warrant price movements: Contrary to some investors' expectations, warrant prices may not go up at the rate represented by the gearing ratio. This is because the gearing ratio may vary as the price of the underlying asset changes. In addition, the price of a warrant is always subject to changes in short-term demand for, and supply of, that warrant.

Set expected profit and loss levels: It is important to control risk. Taking into account the expected volatility and time to expiry of a warrant, you have to be very clear when to take a profit or stop a loss, or whether to close your position before the warrant expires. Be realistic when setting your target levels and, more importantly, act on your strategy.

Avoid overbuying: Holding too many warrants in your portfolio can expose you to undue risk. Indeed, it is important to set an appropriate limit on the proportion of your portfolio that is invested in warrants, based on your investment objectives and risk tolerance level. Review your portfolio regularly and avoid going beyond the predetermined proportion.

Find out how liquidity is provided: It is important that you can get in and out of a warrant position quickly at low cost. Every warrant issuer must appoint a liquidity provider for its warrants. You can find out the details of an issuer's commitment to provide liquidity in the listing document. These include the method (active quotes or responding to quote requests), the liquidity provider's broker ID, the maximum time to respond to a quote request, maximum spread, minimum lot size and the circumstances under which the obligation to provide liquidity will be suspended. The designated HKEx's website has the [list of all the liquidity providers](#) for all derivative warrants.

Look beyond warrant recommendations: Recommendations on warrants and trading strategies in newspaper columns, and on TV and radio programmes often do not take into account individual investors' personal circumstances. What's more, some recommendations are given by warrant issuers in their own sponsored programmes rather than by independent market practitioners. It is important to know the assumptions behind any investment recommendation; never rely solely on a recommendation when making an investment decision.

FAQs

Trading in warrants is more complex than dealing in stocks, although both are conducted through the Stock Exchange of Hong Kong (SEHK).



- [What are the differences in the trading procedure for warrants and stocks?](#)

Except for direct business transactions, your orders must be placed through the SEHK's Automatic Order Matching and Execution System (AMS/3) when you trade either stocks or warrants. All orders are automatically matched and executed on the basis of price and time priority. Both stock and warrant transactions are settled on T+2 (T being the trade date).

However, there are certain differences you need to be aware of:

Liquidity Provider: A warrant issuer must appoint a liquidity provider for each derivative warrant issued. Before you place an order, you can check if the liquidity provider provides active bid or ask quotes

(active quotes) or you have to call the liquidity provider to ask for a quote (quote request). No such mechanism is in place for trading stocks.

No short selling is allowed: Derivative warrants are not designated securities eligible for short selling. Therefore, except for the liquidity provider, it is illegal to sell a warrant which you do not own and then buy it back on the same day.

Exercisable right: Unlike stocks, warrants give their holders the right to buy or sell the underlying asset. Only cash-settled derivative warrants which are in-the-money on expiry will be automatically exercised. Otherwise, you need to give instructions to your brokerage to exercise your warrants.

Stamp duty: Trading in stocks (except for the seven Nasdaq stocks traded under the Stock Exchanges pilot programme) are subject to stamp duty, payable by both the buyer and seller in a transaction. However, stamp duty is not chargeable for trading cash-settled derivative warrants, or warrants issued over assets other than stocks.

- How can I benefit from the liquidity providing mechanism?

Issuers should appoint a liquidity provider for every derivative warrant they issue. A liquidity provider can provide liquidity by responding to requests for quotes (quote request) or by actively inputting orders into the Exchange's trading system (active quotes). If your warrant adopts the method of quote request and, when there are no bid or ask quotes provided by the liquidity provider, you can call for a quote at the phone number shown on the listing document, [the HKEx website](#) and the designated page of the warrant (see below).

MARKET	STOCK	9001	PRICE	QTY
CL-HSBC@EC0123	MAIN BROKER		LEFT/RIGHT	
Security Enquiry				
9001	CL-HSBC@EC0123		BID (36.00)	ASK (36.00)
		MAIN	0660	3150
HIGH			1230	2690
LOW			-1s	+1s
PRV CLOSE	37.00		2460	3450
NOMINAL	37.00			5610
P/E RATIO				
SHARES TR		BID	ASK	
TURNOVER		36.00	36.00	
SPREAD 0.25 /0.25		SHRS(ORD)	SHRS(ORD)	
LOT SIZE	10	260(2)	80(2)	
		20(1)	40(2)	
CURRENCY HKD()		()	()	
LP9500-28808444		()	()	
		()	()	
Order Input				
NEWS LINK MISC				

The liquidity provider's
Broker ID

Phone number for making
quote request

- **Can I sell a warrant on the expiry day?**

Note that the expiry day, which is equivalent to the last listing day, is not the same as the last trading day. To ensure that a trade executed has sufficient time to be cleared and registered, three settlement days are set between the last trading day and the expiry date. Investors can only trade on or before the last trading day. For instance, if a warrant expires on 10 June (Friday), the last day of trading falls on 6 June (Monday), assuming all the days in the period are settlement days.

To remind investors of these two important dates, issuers need to publish an announcement at least seven business days before the expiry day on the [HKEx website](#). Bear in mind that you can only trade a warrant on or before its last trading day. So, remember to check the last trading day if you want to sell a warrant before expiry.

- **What should I pay attention to in exercising a warrant?**

American vs. European: With an American warrant, you can exercise it on or before the expiry day. Whereas, an European warrant can be exercised only on the expiry day. As a rule of thumb, you exercise a warrant only if it is in-the-money.

Cash vs. Physical settlement: Derivative warrants can be settled by either cash or physical delivery. Usually, derivative warrants on a basket of stocks, an index, a currency, a commodity, a futures contract (e.g. oil futures), and stocks listed overseas are cash-settled. Derivative warrants on a single stock listed on the SEHK can be either cash or physically-settled, but in practice, most are cash-settled. Subscription warrants involve physical settlement.

Cash-settled derivative warrants are automatically exercised on the expiry day if they are in-the-money. The net cash settlement amount will be paid to you within the prescribed time as stated in the listing document. In deducing the cash settlement amount, for standard derivative warrants whose underlying stocks are listed on the Stock Exchange, the exercise price is compared with the average of the closing prices of the underlying stock for the five trading days up to and including the trading day before the expiry day. For exotic warrants and standard warrants, which are linked to stocks that are not listed on the Stock Exchange, or linked to assets other than stocks (e.g. an index, a futures contract), refer to the listing document for the valuation formula.

In the case of a physically-settled derivative warrant, it can be exercised only upon your instruction. Note that you may have to wait for a certain period before receiving the underlying shares after exercising a call warrant on a single stock. So, you are subject to the risk of fluctuations in the share price between the exercise day and the day on which you receive the shares. If you hold a physically-settled put warrant on a single stock, you have to be able to deliver the underlying shares on the exercise day.