

What is Derivative?

Derivative product is a financial product whose value depends on, or derives from the value/performance of another asset. Futures, forwards, options, warrants, CBBC, swaps, structured notes are all examples of derivative products. It can be used for hedging, protecting against financial risk, can be used to speculate or provide leverage on the movement of underlying asset. It can trade on an exchange or over-the-counter (OTC).

什麼是衍生產品？

衍生產品是一種金融產品，其價值取決於或源自於另一資產的價值/表現。期貨、遠期、期權、權證、牛熊證、掉期、結構性票據都是衍生產品的例子。它可用於對沖、防範金融風險、可用於投機或為標的資產的變動提供槓桿。它可以在交易所或場外 (OTC) 進行交易。

Payoff Pattern

Derivatives product can be classified into **forwards** and **options** based on their payoff patterns.

收益模式

The payoff pattern of forward is linear and symmetric. This means that the value of the derivative changes in the same direction and proportion as the value of the underlying changes. For example, if the Hang Seng Index rose 1%, the index's near-term futures contracts should also rise 1%. Deviations from 1% will be slightly off due to changes in index composition expectations, future dividend term structure, forward interest rate expectations, etc.

The payoff pattern of options is non-linear and asymmetric. This means that the change in value of the derivative is not in the same proportion and direction to the change in the value of the underlying asset. As in the example above, a 1% increase in the Hang Seng Index does not mean that the options should also increase by 1%. This depends on the type of option (call or put), the status of the option (in-the-money, at-the-money, or out-of-the-money), expiration time, etc.

衍生產品可根據收益模式分為遠期和期權。

遠期 – 收益模式是線性和對稱的，這意味著衍生品價值的變化與標的物價值變化的方向和比例相同。例如，如果恆生指數上漲 1%，該指數的近期期貨合約也應該上漲 1%。但現實中，由於受未來指數成份股構成的預期、未來派送股息預期、遠期利率預期的影響等，上漲幅度可能會與 1% 有輕微偏差。

期權 – 收益模式是非線性和不對稱的。這意味著衍生品價值的變化與標的資產價值變化的比例和方向不同。如上例所示，恆生指數上漲 1% 並不意味著期權也應上漲 1%。這取決於期權的類型 (看漲或看跌)、期權的狀態 (價內、等價或價外)、到期時間等。

Futures vs. Forwards

期貨與遠期

A futures contract is a type of forward contract. They are priced the same way. The main difference is that futures contracts are exchange-traded contracts, where Hang Seng Index futures and H-share index futures are examples of exchange-traded futures contracts. They have specified terms on contract size, contract duration, settlement method, etc. For those contracts that are not traded on exchanges, they are called forward contracts. All of these contracts are traded through the OTC market. Another difference is that futures contracts require a minimum margin. The purpose of margin payments is to ensure that investors have sufficient funds to cover any possible trading losses. For forward contracts, actual payments will only be settled on the contract expiration date. In this sense, both parties are taking counterparty risk for the other.

期貨合約是遠期合約的一種，它們的定價方式相同。主要區別在於期貨合約是交易所買賣合約，其中，恆生指數期貨和 H 股指數期貨是交易所買賣期貨合約的例子。它們在合約規模、合約期限、結算方式等方面都有固定的條款。對於那些不在交易所交易的合約，它們被稱為遠期合約。所有這些合約都通過場外市場進行交易。另一個區別是交易期貨合約前需要支付最低保證金。其目的是確保投資者有足夠的資金來彌補任何可能出現的交易損失。對於遠期合約，實際付款只會在合約到期日進行結算，從這個意義上說，雙方都在為對方承擔交易對手風險。

Cost of Carry

持有成本

The relationship between futures prices and spot prices can be summarized in terms of what is known as the cost of carry. This measures the storage cost plus the interest that is paid to the asset less the income earned on the asset.

期貨價格和現貨價格之間的關係可以用持有成本來概括。持有成本是存儲成本加上持有資產需繳付的利息減去資產所產生的收入所得而來的。

Expiry Date

到期日

It is the date specified in the futures contract. This is the last day on which the contract will be traded, at the end of which it will cease to exist.

在期貨合約中指定的日期。這是該合約進行交易的最後一天。這一天過後這個合約將被終止進行交易。

Front Month 即月	The first expiration month in a series of contract month. 在一系列合約月份中的第一個到期結算的月份。
Initial Margin 初始保證金	The initial deposit makes to the broker when open a new futures position whether long or short. 當投資者進場建立期貨合約部位時，不論是長倉還是空倉繳納給經紀人的保證金。
Maintenance Margin 維持保證金	The minimum amount of cash that is needed to have in the trading account in order to maintain the outstanding position. 投資者為了維持現有部位而必須保持其帳戶內的最低保證金金額。
Mark-to-market 按市值計價	At the end of each trading day, the value of the derivatives portfolio in the investors' accounts are adjusted according to the daily settlement price of each outstanding contract in a process known as mark-to-market. 在每個交易日結束後，對投資者帳戶中尚未結算的衍生產品組合價值，以當日結算價為標的進行重新的價值評估。
Open Interest 未平倉合約	Open interest is generally defined as the number of "open" futures or options contracts that have not expired or been exercised. It is a general indicator of market depth or liquidity. 未平倉合約通常被定義為仍未到期或仍未行使的“未平倉”期貨或期權合約的數量。它是市場深度或流動性的一般指標。
Call Options 認購期權	The buyer of a call option has the right to buy the underlying asset at a predetermined price at a predetermined time in the future. The value of a call option is affected by many factors, but here are two basic rules that investors should keep in mind. The longer the duration, the more expensive the call option. The more volatile the underlying asset, the more expensive the call option becomes. 認購期權的買方有權在未來預定時間以預定價格購買標的資產。還有許多其他因素會影響認購期權的價格，但投資者應緊記以下兩個基本規則。認購期權的期限越長，期權的價格就越高；標的資產的波動性越大，認購期權的價格就越高。
Put Options 認沽期權	A put option is essentially the opposite of a call option. The buyer of put option has the right to sell an underlying asset at a pre-determined price at a pre-determined time in the future. Same as the two basic rules of the call options, the longer the maturity, the more expensive the put option. The more volatile the underlying, the more expensive the put option becomes. 認沽期權本質上與認購期權相反，認沽期權的買方有權在未來預定時間以預定價格出售標的資產。與認購期權的兩個基本規則相同，認沽期權的期限越長，期權的價格就越高；標的資產的波動性越大，認沽期權的價格就越高。
Moneyness 期權的狀態	It is mainly used to describe the relationship between the strike price of an option and the current price of the underlying asset. The status can be classified as in-the-money (ITM), at-the-money (ATM) or out-of-the-money (OTM). 主要是用於描述期權的執行價格與其標的資產的當前價格之間的關係。該狀態可分為價內 (ITM)、等價 (ATM) 或價外 (OTM)。
In-the-money (ITM) 價內	A call option is in an ITM state when the strike price is lower than the current price of the underlying asset. A put option is in an ITM state when the strike price is higher than the current price of the underlying asset. In this state, the price of the option includes intrinsic value and time value. 當執行價格低於標的資產的當前價格時，認購期權是處於 ITM 狀態。當執行價格高於標的資產的當前價格時，認沽期權是處於 ITM 狀態。在這狀態下，期權的價格包含內在價值及時間價值。
At-the-money (ATM) 等價	Whether it is a call option or a put option, the option is in an ATM state when its strike price equals the current price of the underlying asset. And this option has no intrinsic value, but time value. 無論是認購期權還是認沽期權，當其執行價格等於標的資產的當前價格時，期權便處於 ATM 狀態。在這狀態下這個期權沒有內在價值，只有時間價值。
Out-of-the-money (OTM) 價外	A call option is in an OTM state when the strike price is higher than the current price of the underlying asset. A put option is in an OTM state when the strike price is lower than the current price of the underlying asset. If an option is in OTM state at expiration, it will become worthless. 當執行價格高於標的資產的當前價格時，認購期權便處於 OTM 狀態。當執行價格低於標的資產的當前價格時，認沽期權便處於 OTM 狀態。如果期權在到期時仍處於 OTM 狀態，它將變得毫無價值。
Option's premium 期權金	The premium of an option consists of intrinsic value and time value. Intrinsic value is the difference between the strike price of the option and the current market price of the underlying asset. Time value refers to the contract's extrinsic value. It is based on the expected volatility of the underlying assets price and the time remaining until the option contract expires. 期權金包括內在價值和時間價值。內在價值反映了執行價格與標的資產當前市場價格之間的價值。時間價值主要是指合約的外在價值，是基於標的資產的預期波動性及期權合約到期的剩餘時間。

<p>Intrinsic Value 內在價值</p>	<p>Call options have intrinsic value when the underlying asset's price is higher than the strike price.</p> <p>Intrinsic Value (Call) = Current underlying asset's price – Strike Price</p> <p>當標的資產價格高於執行價格時，認購期權具有內在價值。</p> <p>認購期權的內在價值 = 當前標的資產價格 – 執行價格</p> <p>Put Options have intrinsic value when the underlying asset's price is less than the strike price.</p> <p>Intrinsic Value (Put) = Strike Price – Current underlying asset's price</p> <p>當標的資產價格低於執行價格時，認沽期權具有內在價值。</p> <p>認沽期權的內在價值 = 執行價格 – 當前標的資產價格</p>
<p>Time value 時間價值</p>	<p>Time value is high or low depending on the expected volatility of the underlying asset price and the time remaining for the contract to expire. This means that if the option contract has more time before expiration, it has a higher probability of being in the money.</p> <p>時間價值的高與低，是取決於標的資產價格的預期波動性和合約到期的剩餘時間。這意味著如果期權距離合約的到期時間越長，它有更高的概率成為價內期權。</p>
<p>Volatility 波動性</p>	<p>It measures the underlying assets tendency to move up and down in price, based on its daily price over a specified time period. Mathematically, volatility is the standard deviation of the percentage change in daily price.</p> <p>There are two kinds of volatility:</p> <p>Historical Volatility: statistical measurement of past price movements.</p> <p>Implied Volatility: measures whether option premiums are relatively expensive or inexpensive. Implied volatility is calculated based on the currently traded option premiums.</p> <p>它是用於衡量標的資產在特定時間價格上下波動的趨勢。在數學上，波動率是每日價格百分比變化的標準差。</p> <p>波動率有兩種：</p> <p>歷史波動率：過去價格變動的歷史統計測量。</p> <p>隱含波動率：是根據當前交易的期權金計算所得出的結果。衡量期權金是相對昂貴還是便宜。</p>
<p>Warrants 權證</p>	<p>Warrants are the most common derivative products with options features in Hong Kong. It is a kind of securities and can be traded in the exchange. We can found there are two different types of warrants in the market. They are Equity Warrant (Company Warrant) and Derivative Warrant.</p> <ul style="list-style-type: none"> – Equity warrant is a call option issued by an issued company giving the warrant holder a right to acquire new shares in that firm or any of its subsidiaries. Usually the exercise price is higher than the market price at the time of issuance. When warrant holder exercises this right, the firm has to issue new shares for them (the total shares outstanding increases). – Derivative warrant is generally issued by third party such as investment bank. They can be either a put or call warrant. The underlying asset can be a single stock, a basket of stocks, an index, a currency, a commodity etc. Most of them are settled in cash. <p>權證是香港最常見的具有期權性質的衍生工具，它是一種可以在交易所交易的證券產品。香港交易市場中的權證分為兩類，分別是股票權證（公司認股證）和衍生權證。</p> <ul style="list-style-type: none"> – 股票權證是由公司發行的看漲期權，給予權證持有人買入該公司或該公司子公司的新股份的權利，通常行權價都會較發行時的市場價格高。當權證持有人行使權利時，公司必須向持股人發行新股份（全部已發行的股份數量便會增加）。 – 衍生權證一般由第三方機構發行，例如投資銀行，它們可以是看漲或看跌權證，目標資產可以是單一的股票、一籃子股票、指數、貨幣、商品等，大部份衍生權證都是以現金結算的。
<p>Callable Bull / Bear Contracts 可贖回牛 / 熊證</p>	<p>Besides derivative warrant, CBBC is one of the most popular derivative products traded in Hong Kong. Same as other derivative instrument, its value is determined by the performance of an asset it is linked to. It also provides investors with a leveraged investment in underlying assets, which can be a single stock, or an index.</p> <p>CBBC has two types of contracts. They are Callable Bull Contract and Callable Bear Contract. By investing in a callable bull contract, investors are bullish on the prospect of the underlying asset and intend to capture its potential price appreciation. Conversely, investors buying a callable bear contract are bearish on the prospect of the underlying asset and try to make a profit in a falling market.</p> <p>除了權證外，牛熊證是我們可以在香港買賣的最流行的衍生產品之一。如其他衍生工具一樣，它的價值取決於和它相關聯的資產的表現。它還向投資者提供關於標的資產的杠杆投資，標的資產可以是單一股票或指數。</p> <p>牛熊證有兩種類型的合同，即牛證和熊證。投資者購買牛證，表示其看好標的資產的前景並打算捕獲其潛在的價格升值所帶來的收益。相反，投資者購買熊證，表示其看淡標的資產的前景，並試圖在市場下跌時獲利。</p>

**Key Risks
Associated with
warrant or CBBC****與權證或牛熊證相關
的主要風險**

Leverage risk - Although the price of the warrant or CBBC is generally lower than the price of the underlying asset, the price of the warrant or CBBC may move far more than the underlying asset. While the potential return of it may be higher than that of the underlying asset, in a worst-case scenario, the value of the warrant or CBBC may fall to zero and the investor may lose their entire investment amount.

槓桿風險 - 雖然權證或牛熊證的價格普遍低於標的資產的價格，但權證或牛熊證的價格變動程度可能遠超其標的資產。雖然其潛在回報可能高於其標的資產的潛在回報，但在最壞的情況下，權證或牛熊證的價值可能會跌至零，投資者可能會損失全部投資金額。

Credit risk - The issuer of warrants and CBBCs are not secured by any assets of the issuer or guarantor (if any) nor backed by any other collateral, and investors will lose all their investment amount if the issuer defaults.

信貸風險 - 權證及牛熊證的發行人並無以發行人或擔保人（如有）的任何資產作抵押，亦無任何其他抵押品支持，若發行人出現違約情況，投資者會損失全部投資金額。

Limited life - Unlike stocks, warrants and CBBCs have an expiry date and therefore a limited life. Unless the warrant or CBBC are in-the-money, it will have no value at expiration.

限定的有效期 - 有別於股票，權證及牛熊證設有到期日，因此具有限定的有效期。除非權證或牛熊證處於價內，否則於到期時將沒有價值。

Time decay - With other factors remain unchanged, the time value of a warrant, or the funding cost of a CBBC will decrease over time until it becomes zero at the expiration date. Therefore, in the absence of a strong view of the underlying asset, warrants or CBBCs should be viewed as relatively short-term investment products compared to investing in the underlying asset.

時間耗損 - 在其他因素保持不變的情況下，權證的時間價值或牛熊證的資金成本會隨著時間的推移而遞減，直至到期日時變為零。因此，在沒有對標的資產有強烈看法的情況下，與投資標的資產相比，權證或牛熊證應被視為相對短期的投資產品。

Mandatory call risk - Investors trading CBBCs should be aware of their intraday "knock-out" or mandatory call features. The CBBC will cease trading when the price of the underlying asset equals the mandatory call price/level as stated in the listing document. Investors can only recover the residual value calculated by the product issuer according to the listing document. Investors should also note that the residual value of the CBBC can be zero.

強制收回風險 - 交易牛熊證的投資者應注意其日內「敲出」或強制贖回的特色。當相關標的資產價格等於上市文件所述的強制贖回價/水平時，牛熊證將停止交易。投資者只能收回產品發行人根據上市文件所述計算出來的剩餘價值，投資者還應注意牛熊證的剩餘價值可以是零。

Market forces - Apart from the fundamental factors that determine the theoretical price of a warrant or CBBC, the price of a warrant or CBBC is also affected by the market supply and demand of the warrant or CBBC. This is especially the case when a series of warrants or CBBCs is almost sold out and there is a further issue of a series of warrants or CBBCs.

市場力量 - 除了決定權證或牛熊證理論價格的基本因素外，權證或牛熊證的價格亦受權證或牛熊證的市場供求所影響。當一個系列的權證或牛熊證幾乎售罄，以及一系列權證或牛熊證有進一步發行時，情況尤其如此。

Volume - High volume should not be taken as a sign that the price of a warrant or CBBC will rise. In addition to market forces, the price of a warrant or CBBC is also affected by a number of factors, such as the price of the underlying asset and its volatility, remaining time to maturity, interest rates and expected dividends from the underlying asset.

成交量 - 高成交量不應被視為權證或牛熊證價格將會上漲的指標。除市場供求外，權證或牛熊證的價格亦受多項因素影響，例如相關資產的價格及其波幅率、剩餘到期時間、市場利率及相關資產的預期股息。

Liquidity Risk - The HKEx requires the warrants or CBBC issuers to appoint a liquidity provider for each individual issue. The liquidity provider may be the only market participant for a particular warrant or CBBC. In the event that a liquidity provider defaults or ceases to fulfill its role, it may be difficult for investors to realise the value in the warrant or CBBC before expiry.

流通量風險 - 香港交易所要求權證或牛熊證發行人為每一隻個別產品委任一名流通量提供者。流通量提供者可能是特定權證或牛熊證的唯一市場參與者。如果流通量提供者違約或不再履行其職責，投資者可能難以在權證或牛熊證到期前將其價值變現。