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1. EXCHANGE-TRADED EQUITY DERIVATIVES

- This section covers equity derivatives traded on Hong Kong Exchanges and Clearing Limited (HKEX)
- Futures contracts offer hedgers, speculators and arbitrageurs the following advantages:
 - *Capital effectiveness*: only margin need be contributed, not the full amount of the underlying asset
 - *Cost effectiveness*: the commission paid to buy/sell futures is relatively low compared to the commission charged on stock transactions
 - *Guaranteed settlement*: futures trade settlement is guaranteed by the clearing house through novation

1.1 Hang Seng Index Futures

- The most popular futures contract traded in Hong Kong
- Global fund managers use HSI index futures and options to hedge or speculate on the direction of the Hong Kong market
- **Cash settled**
- **Underlying instrument**: HSI comprising 55 constituent stocks

1.2 Hang Seng Index Options

- Cash settled European options that can only be settled on the day of expiry
- **Underlying instrument**: HSI comprising 55 constituent stocks
- Flexible index options provide flexibility in strike prices and expiry days

1.3 Mini-Hang Seng Index Futures/Options

- Mini-HSI derivatives are smaller versions of HSI products designed for retail investors with a multiplier of HKD10 instead of HKD50 per index point
- Note that the Mini-HSI futures contract has a value one-fifth of that for HSI futures
- **Cash settled**
- **Underlying instrument**: HSI comprising 55 constituent stocks

1.4 Hang Seng China Enterprises Index (HSCEI) Futures/Options

- HSCEI derivatives are offered by HKEx to meet the growing needs of investors interested in China related securities
- The options are **European options**
- **Cash settled** and the contract multiplier is HKD50 per index point
- Mini-HSCEI futures have a contract multiplier of HKD10
- **Underlying instrument:** HSCEI reflecting the overall performance of Mainland securities listed in Hong Kong, including H-shares, Red-chips and P-chips
 - *H-shares* – shares issued by companies incorporated in Mainland China and listed on SEHK
 - *Red-chips* – Mainland securities that have least a 30% shareholding directly held either by Mainland entities or by companies controlled by such entities, and at least 50% of sales revenue derived from the Mainland
 - *P-chips* – companies that have more than 50% of their sales revenue derived from mainland China but are not H-shares or Red-chips
- HSCEI is compiled and calculated by Hang Seng Indexes Company Limited (HSIL)

1.5 Stock Futures

- Underlying instrument is a specified quantity of an individual stock or exchange-traded fund (ETF)
- Cash settled
- **Underlying instrument:** differs between stocks. For example, HSBC stock futures are based on the value of a parcel of 400 HSBC shares; China Mobile 500 shares; and CK Hutchison 500 shares

1.6 Stock Options

- Settled by physical delivery
- Can be exercised at any time up to expiry (American style)
- Stock options include options on ETFs
- **Underlying instrument:** as with stock futures, the quantity of the underlying asset differs between stocks and the number in each case is the same as futures (ie HSBC is 400 shares)

1.7 Dividend Futures

- As equity indexes generally exclude dividends, the HSI and HSCEI dividend futures allow investors to hedge their dividend exposure, to bet on expected dividend outlook and to exploit arbitrage opportunities
- **Underlying instrument:** the dividend point index (calculated by HSIL) measuring the cumulative total cash dividend value for all constituents of the corresponding index

1.8 HSI Volatility Index (VHSI) Futures

- Measures the expected volatility of the corresponding market and is perceived as a barometer of investor sentiment (aka the “fear index”)
- Compiled and calculated by HSIL
- Allows investors to manage volatility risk in HSI or Hong Kong’s stock market in general
- **Underlying instrument:** VHSI that aims to measure the 30-calendar-day expected volatility of the HSI and is derived from HSI put and call options

1.9 BRICS Futures

- Stands for Brazil, Russia, India, China and South Africa
- The BRICS Exchanges’ benchmark index futures allow investors to gain exposure to the BRICS market using HK dollar in an Asian time zone
- **Underlying instrument:** Brazil’s IBOVESPA Index; Russia’s MICEX Index; and South Africa’s FTSE/JSE Top40 Index
- **Cash settled** in HK dollar

1.10 CES China 120 Index Futures

- Provide investors with a tool to simultaneously gain exposure to China and Hong Kong stock markets
- Serves as an effective risk management tool for institutions to hedge their China equity portfolios
- **Underlying instrument:** CES 120 that tracks the performance of the largest and most liquid China stocks listed in Mainland China and Hong Kong

1.11 Sector Index Futures

- HKEX’s sector index futures cover three major business sectors in HKEX’s securities market and include:
 - Hang Seng Mainland Oil & Gas Index Futures
 - Hang Seng Mainland Banks Index Futures
 - Hang Seng Mainland Properties Index Futures
- They enable investors to capture sector-specific trading opportunities and manage their investment risk exposure more precisely
- **Underlying instrument:** Hang Seng Sector Index Series, which is managed by HSIL, includes six sector indexes. The indexes reflect the performance of the relevant sectors by using the top 10 largest stocks with adequate liquidity as representatives of each sector

1.12 MSCI Equity Indexes Futures/Options

- These have been launched by HKEX in phases since July 2020
- **Underlying indexes** are dozens of MSCI indexes in Asia and emerging markets allowing global investors convenient access to a wide range of Asia and emerging market exposures in a liquid market

1.13 Hang Seng TECH Index futures/options

- The launch of these futures and options reflects the rapid growth of the technology industry, providing investors with new risk management tools for exposure to Hong Kong-listed technology companies
- Cash settled and contract multiplier is HKD50 per index points
- **Underlying** is the Hang Seng TECH index, which tracks the performance of the 30 largest Hong Kong-listed technology companies with exposure in fintech, internet, e-commerce, cloud and digital activities

2. WARRANTS

- The first **equity warrants** in Hong Kong were issued in the 1980s
- In 1989, the first **derivative warrant** was issued in Hong Kong and became the prevalent product
- Like options, warrants give an investor exposure to the underlying securities without owning the securities and they will expire at a certain time in the future
- While **both warrants and options are traded on the Stock Exchange of Hong**, warrants are matched using the **Orion Trading Platform (OTP-C)** and cleared through **CCASS**, and options are matched using **HKATS** and cleared through **DCASS**
- Warrants **cannot** be sold short
- Similar to options, the factors that affect the price of a warrant are:
 - Time to expiry
 - Market volatility
 - Interest rates and dividends
 - Current underlying price vs exercise (strike) price

2.1 Features of a Warrant

- The basic components of a warrant are:
 - Underlying instrument
 - Settlement method
 - Whether call or put, in the case of a derivative warrant
 - Exercise style
 - Exercise (strike) price
 - Conversion ratio

Underlying Instrument

- The value of a warrant is derived from the price of the underlying instrument
- Some warrants are priced over a basket or portfolio of shares

Settlement Method

- Warrants can be settled by physical delivery of the underlying instrument or via cash settlement

Call and Put Warrants

- A call warrant gives the holder the right, but not the obligation, to buy the underlying stock at a predetermined price at some time in the future
- A put warrant gives the holder the right, but not the obligation, to sell the underlying stock at a predetermined price at some time in the future
- Call warrant holders benefit from an upward price movement in the underlying asset, whereas put warrant holders benefit from a downward trend

Exercise Style – American or European

- **American** style warrants can be exercised at any time, on or before the expiry date
- **European** style warrants may only be exercised on maturity of the warrant
- In Hong Kong, **derivative warrants** are always European style, while **equity warrants** are usually American style

Exercise Price

- The strike price that must be paid when a warrant is exercised to ensure transfer of the underlying instrument

Conversion Ratio

- This is the number of warrants that must be exercised to convert into one unit of the underlying stock
- For example, if the conversion ratio was 10-to-1, ten warrants must be exercised to obtain one unit of the underlying asset

2.2 The Warrant Market in Hong Kong

- Since 1989, equity warrants (or subscription warrants) and derivative warrants have been trading in Hong Kong
- Details of warrant trading in Hong Kong follow:

Warrant trading (HKDm): 2018-2020

Year	Subscription (or equity) Warrants	Derivative Warrants	Total
2018	21.83	3,866,143	3,886,165
2019	8.81	2,418,136	2,418,145
2020	15.18	2,260,916	2,260,932

Source: HKEX Fact Book 2020

2.3 Types of Warrant

- There are two broad types of warrants traded on the SEHK: equity warrants and derivative warrants

Equity Warrants

- Equity warrants carry the right to subscribe for the underlying stock of the issuer
- Although warrants are less certain, as to the funds raised in the future, than rights issues, there will in general be no immediate dilution effect to shareholdings before the warrants are exercised
- They involve the physical delivery of shares
- Expiry for equity warrants is between one and five years
- Exercise usually follows the American style, although European-style warrants are also available
- Dilution of shareholdings occurs when warrants are exercised as new shares will be issued
- Holders are not entitled to dividends

Derivative Warrants

- Derivative warrants are similar to equity warrants but are issued by a party that is independent of the issuer of the underlying securities of the company and its subsidiaries – usually investment banks and other institutions
- Exchange-traded and usually have an expiry of between six to nine months
- Majority in Hong Kong are settled in cash
- Can be call or put warrants
- Derivative warrants with a physical delivery are for shares that are already in issue, so there is never a diluting effect on shareholdings
- May be issued over assets other than securities (such as currencies or commodities)
- Index warrants, basket warrants and single stock warrants are commonly issued in Hong Kong

2.4 Issuance of Derivative Warrants

Requirements for Issuers

- As derivative warrant investors are exposed to credit risk of warrant issuers, the Listing Rules specify requirements of issuers
- The issuer must be incorporated, not a private company and, in the case of non-collateralised warrants, have:
 - NAV of not less than **HK\$2 billion**
 - Have the required credit rating, or be regulated by SFC/HKMA or be a government or state

Requirements on Underlying Assets

- Underlying asset may be stocks listed in Hong Kong or overseas, a basket of stocks, indices, foreign currencies or commodities
- Underlying stock of a warrant must be either in the HSI or on an eligible list which is updated quarterly by SEHK
- If capitalisation of shares in public hands exceeds HKD10 billion, SEHK may waive eligible list requirement

2.5 Liquidity Providers for Derivative Warrants

- There is a risk that an investor may not be able to readily buy or sell warrants on the market – occurs with deeply out-of-the-money warrants
- Since 2002, issuers of derivative warrants are required to appoint Liquidity Providers (LP)
- For each warrant issue, there can only be one LP, whose duties include:
 - Providing continuous quotes or quote requests from five minutes after the market has opened until the market closes
 - Providing liquidity for at least 10 board lots of a warrant
 - Specifying the maximum spread between bid and offer prices in the listing document
 - Specifying in the listing document the response time for each quote request
- In certain circumstances, there is no need for the LP to provide liquidity

2.6 Reasons for Investing in Warrants

- **Advantages** of investing in warrants:
 - Suit investors with longer term views, as they have longer expiry periods than options
 - They are available over baskets of stocks, providing exposure to a certain sector or sub-sector
- **Drawbacks** of investing in warrants:
 - As warrant supply is controlled by issuers, market prices can sometimes be distorted by a demand and supply imbalance
 - Short-selling is not possible for exchange-traded warrants

3. OVER-THE-COUNTER EQUITY DERIVATIVES

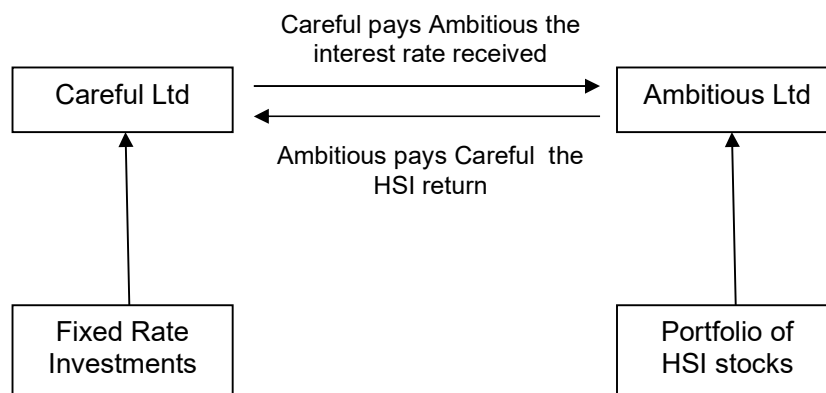
- All OTC derivatives **share the following characteristics**:
 - They are flexible products that can be tailored to suit the needs of the counterparties
 - Generally traded in a decentralized marketplace
 - There are no exchange-based trading rules nor margin requirements
 - There are no clearing houses acting as central clearing counterparties, hence parties are faced with counterparty risk
- The **most common OTC equity derivatives** will now be considered:
 - Equity-linked debt investments
 - Equity swaps
 - OTC options and warrants

3.1 Equity-linked Debt Investments

- These usually involve **purchasing a debt instrument and receiving payments based on the performance of a stock**, a stock index or a portfolio of stocks
- For example, a HKD10m ten-year debt could have annual periodic cash flows based upon the year-on-year performance of the Hang Seng Index. If the Index increases 10% for a particular year, the investor would receive HKD1m at the end of that year

3.2 Equity Swaps

- Similar to an interest-rate swap, an equity swap involves two parties who agree to **swap cash flows for a specified period of time, linked to the performance of a stock, a basket of stocks or a stock index**
- A common situation would be one party swapping the cash flows from a portfolio of short-dated debt securities for the returns of an equity index



- Equity swaps enable parties to swap returns on their portfolio of investments to better suit their needs and views of the market

3.3 Over-the-counter Options and Warrants

- Include calls and puts on equity indices, individual stocks or baskets of stocks
- Usually structured in a similar way to warrants traded on an exchange
- Options can be “vanilla” or “exotic”
- Exotic equity derivatives, with more complex pay-out structures, are traded on indices, stocks and baskets of stocks

4. NEW STRUCTURED PRODUCTS

- The most popular **new products in the Hong Kong market** over the past few years have been:
 - Equity-linked note (ELN)
 - Equity-linked instrument (ELI)
 - Range accrual note
 - Callable bull/bear contract (CBBC)
 - Accumulator
- The different products vary in terms of:
 - Whether the embedded options have knock-out features or not
 - The time period and frequency at which the options can be exercised
 - Special features unique to a particular product

4.1 Equity-linked Note (ELN)

- ELNs can provide a higher yield from the option premium generated by selling either a put option or a call option of the linked underlying asset
- If an investor sells a call option, the ELN is described as “bearish”, as the asset price is not expected to rise
- If an investor sells a put option, the ELN is described as “bullish”, as the asset price is not expected to fall
- **Bearish ELN** = purchasing a note + selling a call option
- **Bullish ELN** = purchasing a note + selling a put option
- Some ELNs are listed on the SEHK, but most are traded OTC
- **A good return** can be expected if the **underlying asset moves in a narrow range**, however losses will be incurred if the asset price moves in the opposite direction to that expected
- The loss can be substantial when:
 - Bullish ELN - price of underlying asset falls significantly
 - Bearish ELN - price of underlying asset rises significantly. In this case, the loss can be unlimited

4.2 Equity-linked Instrument (ELI)

- While ELNs are OTC instruments, ELIs are listed on the SEHK
- As price quotations are made on a real-time basis, ELIs have better price transparency as well as higher liquidity
- ELIs with similar exercise prices and times to expiry can be compared with the implied volatilities of the embedded options
- The higher the implied volatility, the higher the perceived risk of large price movements

4.3 Callable Range Accrual Note

- This instrument usually comes with two features:
 1. It is callable, ie the principal can be repaid, thus shortening the investment horizon
 2. The underlying asset is usually a basket of stocks
- Two coupon rates will apply to the range accrual note:
 - A high coupon (maximum coupon rate)
 - A low coupon (minimum coupon rate)
- The **maximum coupon rate will apply** as long as all stocks in the underlying stock basket fall inside the predetermined range of prices
- If any one of the stocks in the underlying stock basket falls outside the range on any day, the **minimum coupon rate will apply** for that day instead
- Thus, the **coupon rate varies on a daily basis** depending upon the varying prices of the basket of stocks
- **Trigger event:** if the fixing values of any of the stocks in the underlying stock basket are at or above their respective callable prices on any scheduled observation date, the note will be terminated and will mature immediately
- An investor who invests in a callable range accrual note **expects that stock prices will trade within the pre-defined range** and that stock prices are unlikely to fall below their respective reference values
- **Benefits to investors:** high coupons are received on a daily basis if stock prices remain within the pre-determined range
- **Risks for investors:** low coupons are received if any of the stocks in the underlying stock basket trade outside the range during the tenor of the note and reinvestment risk arises if the note is called (repaid)

4.4 Callable Bull/Bear Contract (CBBC)

- A type of structured product where investors do not need to pay the full price required to own the actual asset
- They can be issued as either bull or bear contracts
- In **Europe**, they are referred to as “**knock out**” or “**stop loss**” certificates; in **UK** as “**contracts for difference**” which are traded on the London Stock Exchange

- CBBCs, which are traded on the SEHK, are issued with the condition that during their lifespan, **they will be called by the issuers when the price of the underlying asset reaches a pre-specified level**, known as the call price
- When the call price is reached, known as a “**mandatory call event**” (MCE) the trading of the CBBC will **cease immediately**
- Investors will buy **callable bull contracts** if the price of the underlying asset is expected to go up
- Investors will buy **callable bear contracts** if the price of the underlying asset is expected to go down
- **Benefits to investors:**
 - **Investors pay less** to buy the CBBC than they would pay for the underlying asset, thereby leveraging their investment
 - The price movement of a CBBC tends to track the price of the underlying asset closely, with a higher associated price transparency
- **Risks for investors:**
 - CBBCs will **expire early** if the underlying asset price reaches the call price
 - Increased underlying asset price volatility will increase the chance of an MCE

4.5 Accumulator

- Investors in accumulators are **obliged to purchase a fixed quantity of underlying assets on each day** within the contract period
- The **purchase price (strike price)** is set at a discount to the initial price, determined on the trade date
- The contract will be terminated when the price of the underlying asset is closed or traded at or **above the trigger price**, which is set above the initial price
- If underlying asset price is closed or traded **below the strike price**, investors must continue to accumulate the underlying asset at the strike price
- **Maximum profit** = trigger price – strike price
- **Maximum loss** is reached when the value of the underlying asset becomes zero, and will be equal to the strike price
- **Investors expect the stock price to trade within a narrow range** between the strike price and the knockout price (trigger price)
- **Risks for investors:**
 - Since accumulator contracts are marked to market and settled daily, investors can face daily problems of margin calls when the underlying asset price is falling
 - Investors who choose not to meet margin calls, will have their position immediately settled, at a loss, by the issuer
 - Leveraged accumulator contracts are embedded with triggers that can result in investors suffering serious losses if the drop in stock prices is beyond expectations

4.6 Inline Warrants

- A type of structured product arranged by the HKEX, entitling investors to receive a specified amount at expiry
- Payment at expiry is conditional upon either of the following **two conditions**:
 - (i) An underlying asset's price falls within a specified range (in-the-range, **ITR**)
 - (ii) The asset price falls outside the specified range (out-of-the-range, **OTR**)
- HKEX limits underlying assets for Inline Warrants to the Hang Seng Index and a small number of actively traded stocks

Inline Warrant Example

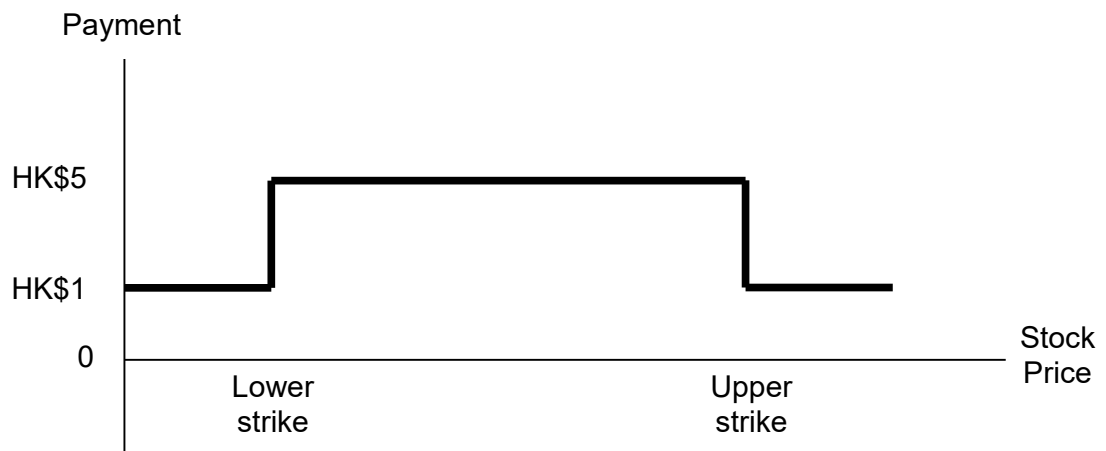
An investor pays HK\$3 for an inline warrant

Under the ITR condition, the investor receives HK\$5

Under the OTR condition, the investor receives HK\$1

The investor will gain HK\$2 if the ITR condition exists at expiry and will lose HK\$ if the OTR condition exists at expiry

Pay-off Diagram of the Inline Warrant



5. PRICING EQUITY DERIVATIVES

5.1 Principles of Equity Derivatives Valuation

- The current cash price of a derivative reflects the future value of that underlying asset
- With regard to the Hang Seng Index as the underlying, if market expectations are that the HSI will be higher in the future, HSI futures will trade at a premium to the current index level. Conversely, if market expectations are that the HSI will be lower in the future, HSI futures will trade at a discount to the current index level
- Notwithstanding market expectations, it is possible to calculate the theoretical (or fair) value of a futures product

5.1.1 Cost of Carry

- Central to calculating the theoretical value of a futures contract is the concept of “cost of carry”
- Cost of carry is **the cost involved in holding the underlying asset**
- For financial futures, the cost of carry represents the opportunity cost of having capital invested in the underlying asset that could be more productively invested elsewhere
- For commodity derivatives, the cost of carry relates to the costs involved in physically storing the commodity
- **Fair value = spot price + cost of carry**
- The nearer a contract is to expiry, the less the cost of carry
- On the day of expiry, there will be zero cost of carry, therefore the futures and spot price must be equal
- How to think about cost of carry for HSI futures contracts:
 - If an investor wishes to gain exposure to equities, she has two choices: (i) invest capital in stocks and receive dividends; or (ii) buy HSI futures
 - When buying futures, the investor is required to pay out a small amount of capital, in the form of an initial margin
 - The balance of the capital that would have been needed, had the investor bought the physical stock, could be invested and earn interest at the current rate
 - If current interest rate > gross dividend yield, the seller of the futures product will want to be compensated, so the futures price will be higher than the spot price
 - Or, if current interest rate < gross dividend yield, the buyer of the futures product will enjoy a higher interest income over the dividend forgone, so will be willing to pay a higher futures price over the spot price
 - In both cases, if current interest rate < gross dividend yield, the futures price will be lower than the spot price

5.1.2 Contango (or Forwardation)

- When **interest rates are greater than dividend yields**, we can expect futures prices to be higher than spot prices, the further away we are from the delivery month
- When this occurs, the market is said to be in contango (or forwardation)

5.1.3 Backwardation

- When **dividend yields are greater than interest rates**, we can expect futures prices to be lower than spot prices, the further away we are from the delivery month. This is due to negative cost of carry
- When this occurs, the market is said to be in backwardation

5.1.4 Basis

- The difference between the spot price and the futures price is known as “basis”
- In a contango market, the basis is negative
- When the market is in backwardation, the basis is positive
- On day of delivery, when spot price = futures price, the value of basis is zero

5.2 Pricing Index Futures

- **Cost of carry =**
(days to expiry/days in year) x (interest rate – gross dividend yield) x spot price of HSI

Pricing Index futures – Example

At the beginning of June 20X1, the HSI is 29,100, gross dividend yield is 3% and the interest rate is 5%. What is the fair value of the June futures contract if there are 30 days until expiry?

Solution

$$\begin{aligned}
 \text{Fair value} &= \text{cost of carry} + \text{spot price} \\
 &= [(30/365) \times (5\% - 3\%) \times 29,100] + 29,100 \\
 &= 47 + 29,100 \\
 &= 29,147
 \end{aligned}$$

What would the fair value be if gross dividend yield is 5% and the interest rate is 3%?

Solution

$$\begin{aligned}
 \text{Fair value} &= \text{cost of carry} + \text{spot price} \\
 &= [(30/365) \times (3\% - 5\%) \times 29,100] + 29,100 \\
 &= -47 + 29,100 \\
 &= 29,053
 \end{aligned}$$

6. HEDGING USING EQUITY DERIVATIVES

6.1 Hedging Using Stock Futures

- **Details for this hedging example:**
 - In September 20X1, Ivan Investor holds a large portfolio of Dan Dare Airways (DDA) stock consisting of 1m shares
 - The portfolio is currently valued at HK\$8.8 million (share price is currently HK\$8.80)
 - Global economic activity is expected to grow sharply in the near future, and with it, the oil price, which will have a negative impact on DDA's profitability. However, analysts believe any fall in the company's stock price will be short-term
 - Despite analyst positivity, Ivan decides to hedge his investment using DDA futures

- **Buy or sell futures?**
 - Ivan will want to profit from a futures trade if the DDA stock price falls. Therefore, he needs to "sell high", so he will need to set up a hedge by selling futures

- **Which contract to sell?**
 - Available contracts are: September, November, December and March
 - Given Ivan's concerns over the short-term, the most appropriate contract is December

- **How many contracts?**
 - Number of contracts needed is calculated by dividing the portfolio value by the value of the DDA December stock futures contract
 - The December is currently trading at HKD9.05 and the contract size of DDA futures is 1,000 shares, therefore the number contracts to be sold is:
$$\text{HK\$8.8 million} / (\text{HK\$9.05} \times 1,000) = 972.37 \text{ (rounded to 973)}$$

- **Implementing the hedge**
 - Sell 973 December 20X1 DDA futures @ HK\$9.05

- **Closing the Hedge**
 - In late December 20X1, as expected, oil prices have jumped and DDA December futures are now trading at HK\$7.25, as is the stock price
 - To close the futures position, Ivan will need to enter into a reversing trade which will involve buying 973 December 20X1 DDA futures at HK\$7.25

- **Loss in the physical market:**
 - $1\text{m} \times (\text{HK}\$8.80 - \text{HK}\$7.25) = \text{HK}\1.55m
- **Profit in the futures market:**
 - Difference in price: $\text{HK}\$9.05 - \text{HK}\$7.25 = \text{HK}\$1.80$
 - Profit on each futures contract: $1,000 \times \text{HK}\$1.80 = \text{HK}\$1,800$
 - Overall profit: $973 \text{ contracts} \times \text{HK}\$1,800 = \text{HK}\$1,751,400$

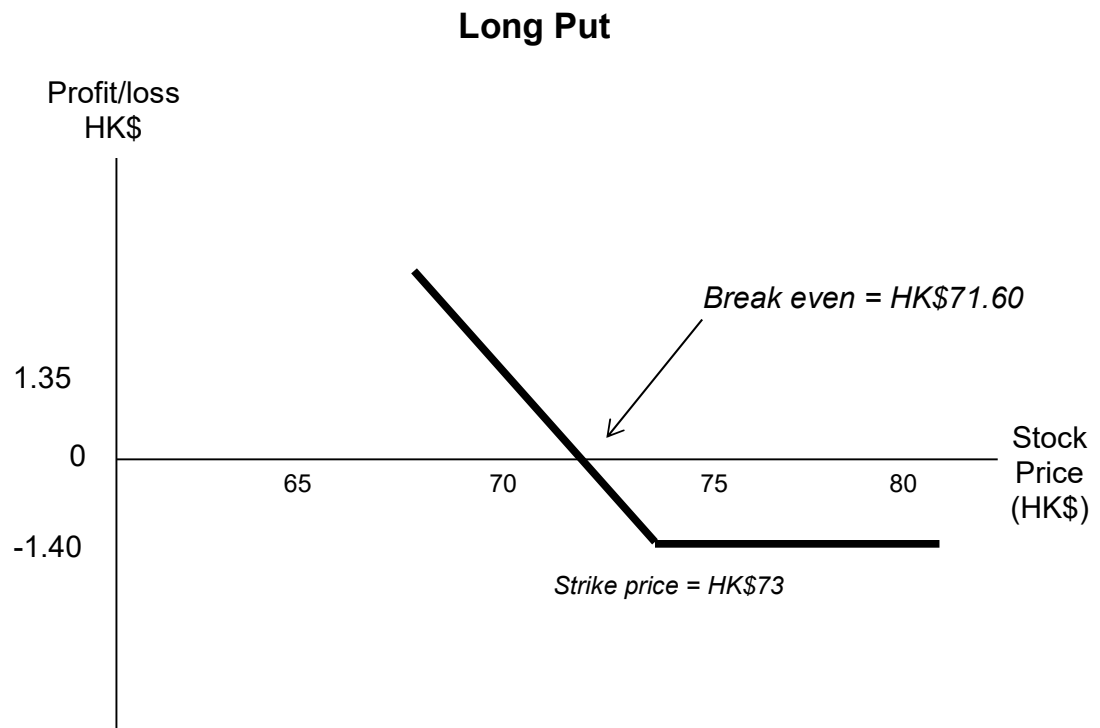
Physical Market	Derivatives Market
1. Ivan holds an equity portfolio valued at HK\$8.8 million	
	2. Sells 973 DDA futures @ HK\$9.05
3. DDA share price falls to HK\$7.25	4. DDA futures fall to HK\$7.25
5. Value of portfolio falls to HK\$7.25m	6. Buys back 973 DDA futures for @ HK\$7.25
7. Loss in physical market of HK\$1.55m offset by profit made on futures trade of HK\$1,751,400	

7. TRADING STRATEGIES FOR EQUITY DERIVATIVES

- We will now look at **three trading strategies** relating to equity derivatives:
 - Buying puts to profit from falling prices
 - Buying calls and selling puts to profit from rising prices
 - Trading futures to profit from stock outperformance

7.1 Buying Puts to Profit from Falling Prices

- It is October and Ivan Investor believes that interest rates will continue to fall in the coming months
- Falling interest rates will put pressure on earnings in the banking industry
- Ivan believes that BCHS Bank will need to revise its half-year earnings forecast downwards leading to a fall in its share price, which is currently trading at HK\$75
- To profit from Ivan's market view, he decides to buy put options for the December contract in BCHS stock
- Ivan selects the HK\$73 strike price, which is trading at HK\$1.40
- This scenario provides the following pay-off diagram:

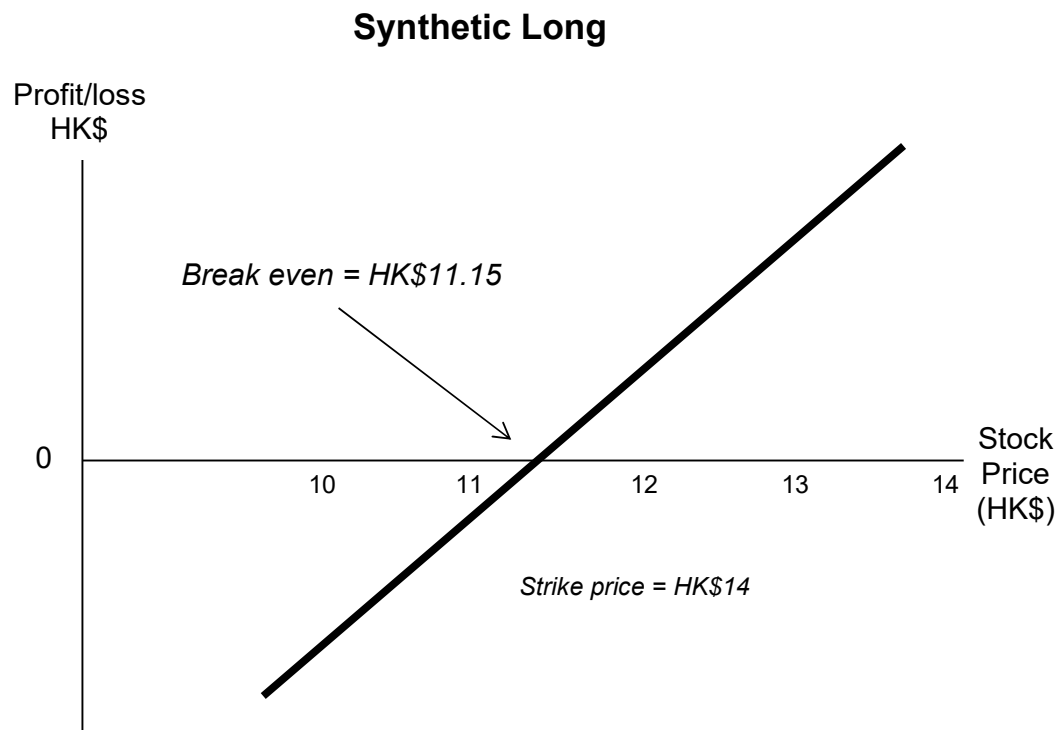


Closing the Trade

- Ivan got it right. The HKMA did indeed cut interest rates and the BCHS stock price fell to HK\$70.5 in late December, when stock puts were trading at HK\$2.75
- To close the trade, Ivan sells his puts and makes a profit of HK\$1.35 per share
- With 400 shares as the underlying for the option contract, Ivan makes a profit of HK\$540 per contract
- Ivan bought 2,500 put contracts, so he is better off by HK\$1.35m

7.2 Buying Calls and Selling Puts to Profit from Rising Prices

- It is January and Ivan Investor believes that airline stocks have been oversold in response to rising fuel costs
- Ivan believes that the share price of Kathy Atlantic, which is currently at HK\$11, will rebound over the coming months
- Rather than investing a significant amount of his capital in Kathy shares, Ivan decides to use options
- Ivan sets up a synthetic long underlying position by buying calls and selling puts, thereby reducing the cost of the overall trade
- Ivan selects the March options with a strike price of HK\$14 – calls are trading at HK\$0.45, while puts are trading at HK\$3.30
- This scenario provides the following pay-off diagram:



Closing the Trade

- As stock options are settled via physical delivery of the underlying shares, Ivan decides to exit his trade prior to expiry
- It is now late March and Ivan's view of the airline market has proved to be correct – Kathy's stock is now trading at HK\$15
- To exit the trade, Ivan sells the calls and buys back the puts. The March HK\$14 calls are trading at HK\$1.25 and the puts at HK\$0.35
- Profit on call trade: Bought at HK\$0.45; sold at HK\$1.25 => profit of HK\$0.80
- Profit on put trade: Sold at HK\$3.30; bought at HK\$0.35 => profit of HK\$2.95
- A combined profit of HK\$3.75 is made for every pair of options traded
- Ivan traded 1,000 contracts in each case with 1,000 underlying shares per contract. This gives Ivan an overall profit of HK\$3.75m, ignoring transaction costs and taxes
- Ivan would have invested HK\$11m (1,000 x 1,000 x HK\$11) in the underlying trade, producing a 36.4% (15-11/11) return over approximately 2 months. The dollar return would have been HK\$4.004m, however HK\$11m would have had to be invested
- By using options, no upfront investment was required

7.3 Trading Futures to Profit from Stock Outperformance

- It is August and Ivan Investor expects the pharmaceutical industry to outperform the overall Hong Kong stock market due to the spread of a new infectious disease and the measures that will be taken to contain it
- Ivan believes that the share price of Philly Pharma, a Hong Kong listed pharmaceutical company, will rise by more than the Hang Seng Index over the next 4 months
- Ivan decides to:
 - Buy 10 December Philly stock futures, priced at HK\$125 with a contract size of 1,000 shares; and
 - Sell one December HSI futures contract currently trading at 25,000

Closing the Trade

- Once again, Ivan got it right. In late December, the HSI futures contract is trading at 25,100 and the December Philly stock futures contract is trading at HK\$135
- To exit the trade, Ivan sells 10 December Philly stock futures and buys one December HSI futures contract
- Profit on Philly stock futures: $(\text{HK}\$135 - \text{HK}\$125) \times 1,000 \text{ shares} \times 10 \text{ contracts} = \text{HK}\$100,000$
- Loss on HSI futures: $(25,000 - 25,100) \times \text{HK}\$50 = -\text{HK}\$5,000$
- Overall profit: $\text{HK}\$100,000 - \text{HK}\$5,000 = \text{HK}\$95,000$