

UBS Education: Calculation Methods for prices of CBBCs and Warrants



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Recently, there are increasing number of inquiries from investors about the price movement criteria of CBBCs and warrants and it is found that the sensitivity of price movement for the same product may be suddenly lower than the previous one. The prices of investment products may change with the movement of the underlying assets, and investors would misunderstand that the products may not be able to keep abreast of trend of the underlying assets, leading to the corresponding theoretical price movements. What are the external factors that would affect the price movements of CBBCs and warrants? And what are their calculation methods respectively?

The prices of CBBCs and warrants would vary with the volatility of the underlying assets. Taking CBBCs as an example, if the prices of the underlying assets of product rise, the prices of the pull contracts will also rise, while the prices of the bear contracts will fall. On the contrary, if the prices of the underlying assets of product fall, the prices of the bull contracts will fall accordingly, while the prices of the bear contracts will rise.

Besides, some investors would inquire the issuers about the reason that the sensitivity of price movement of the pull contracts is lower than before when the product prices rise to \$0.25 or above. Hence, many investors would misunderstand that the issuers do not quote in a reasonable manner and the products may not be able to keep abreast of trend of the underlying assets. However, the reason behind the lower sensitivity of price movement of the CBBCs is not due to delay in quotation from the issuers, but the difference in the tick of CBBCs: when the price of CBBCs is below \$0.25, the tick would be \$0.001, while the tick would be \$0.005 if the price is between \$0.25 and \$0.5, representing 5 times of the previous case, and hence an increase of 5 times in terms of change in underlying asset. In addition, the leverage of the CBBCs will also vary with the product prices and difference among calls. When the CBBCs approach to the call price, its intrinsic values would become smaller, and the percentage of the same degree of change relative to the CBBCs will increase, representing an increase in the actual leverage of the CBBCs.

Moreover, regarding warrants, although the calculation method of the movement of the underlying assets on the prices of warrants is the same as that of the CBBCs, there are more factors affecting the prices of warrants than that of CBBCs. Apart from the underlying assets, another major factor affecting the prices of warrants is the rises and falls of the implied volatility. When the prices of the underlying assets rise, the prices of call warrants will also rise, while the prices of put warrants will fall accordingly. Conversely, when the prices of the underlying assets fall, the prices of call warrants will fall and the prices of put warrants will rise accordingly. Secondly, the rises and falls of implied volatility will also affect the price of warrants. In short, implied volatility refers to the forecast of the future volatility of the underlying assets. If other factors remain unchanged, when the implied volatility of warrants rise, the prices of both call and put warrants will rise accordingly; conversely, when the implied volatility recovers, the prices of both call and put warrants will fall accordingly.

Two Factors Influencing the Warrant Prices

	Call Warrant	Put Warrant
Underlying Prices (Rise)	↑	↓
Implied Volatility (Rise)	↑	↑

Commonly Used Formulas for Calculating Theoretical Price Changes of CBBs or Warrants

$$\text{Calculation of Theoretical Price Movements of CBBCs or Warrants} = (\text{Price Changes of Underlying Assets} \times \text{Hedging Value}) / \text{Entitlement Ratio}$$

$$\text{Calculation of Percentage of Theoretical Price Movements of CBBCs or Warrants} = \text{Percentage Change of Underlying Asset Price} \times \text{Actual Leverage of CBBCs or Warrants}$$

Lastly, although most investors understand to use the existing formulas or online price calculators to convert theoretical price movement of CBBCs and warrants, there are still a few of investors calling the issuers to inquire the reason that the product price does not reflect such price movement even they can calculate the theoretical value of that product. In fact, the tick for the price movement must be a complete one regardless of call warrant or put warrant. For example, the price of Warrant A is \$0.26 and the movement per tick is \$0.005. Using the above formula, if the theoretical increase of Warrant A is \$0.003, the prices of the warrants will not move because it is less than one tick.

Learning More About Investment



The Impacts on Prices of CBBCs or Warrants when the Outstanding Quantity Reaches 100%

After the explanations on the calculation methods of CBBCs and warrant prices, it is believed that investors would have an in-depth understanding on the factors and rises and falls in the price movements of the underlying products. However, investors should be aware that after listing on the Hong Kong Stock Exchange, the prices of such products will no longer depend solely on the theoretical prices, but also changes in demand and supply in the market. For example, when all of the shares were issued by issuers have been sold out (i.e. when the outstanding quantity reaches 100%), even if the issuers still provide the purchase price for that product based on the theoretical price, but the transactions prices of the warrants may be pushed to a level above the theoretical prices based on demand and supply factors, resulting in a situation where the products do not follow the prices. Hence, the prices of products displayed in the market would be higher than the theoretical prices. Therefore, when the investors select investment products, they should not only pay attention to the product features (such as time value dissipation, hedging value, etc.), but also the real-time outstanding quantity of the products. It is worth noting that the outstanding quantity of products shown on the issuer's website are the data recorded as of the last market closing day, so investors are advised to call the issuers to inquire the real-time outstanding quantity of the related products as and when appropriate.

* "Outstanding Quantity" refers to the number of warrants held by investors other than the issuers, which can be used to observe the holdings of investors.

For details on warrants and CBBCs, please refer to UBS website:

<http://www.ubs.com/hkwarrants>

Clip of warrants' tutorial and market highlights

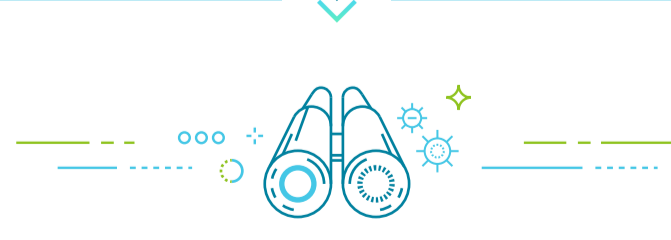
<https://www.youtube.com/@ubswarrants8566>

UBS Warrants and CBBCs' Team

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