Derivatives (options e futures)

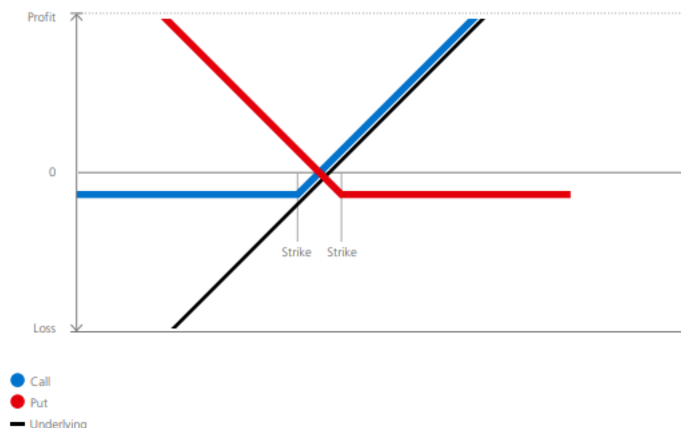
A financial contract where the price is derived either from assets such as equities, bonds, commodities or precious metals or from variables such as exchange rates, interest rates and indices.

What are options?
An option is an agreement between a buyer and a seller conferring the right to buy or sell a specific underlying asset (often referred to simply as the "underlying") at a predefined price at or before a specific point in time (the expiry date). The agreed price applies regardless of the current market value on the expiry date. Various types of underlying are possible:

- Investment assets: e.g. shares, bonds, precious metals
- Other instruments: currencies, interest rates, indices
- Events: credit events, natural disasters

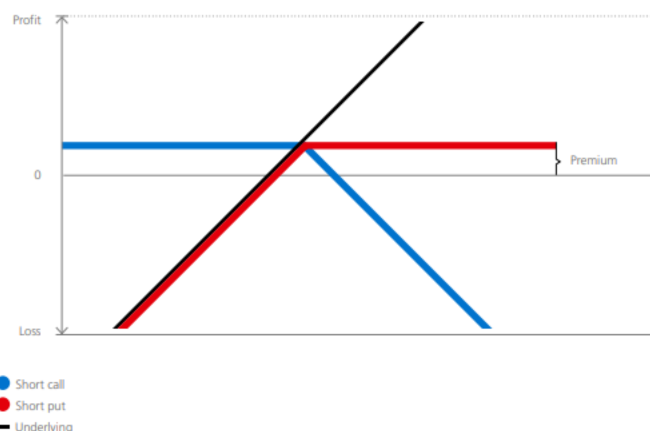
The buyer of an option has the right to buy a specified amount of an underlying from the seller (call option) or sell it to the seller (put option) at a predefined price (known as the strike price) on or before a set point in time (the expiry date). The price of this right is called the premium.

Example of a buyer



The seller (writer) of an option must sell the underlying to the buyer at the strike price (short call) or buy the underlying from the buyer at the strike price (short put) on or before the expiry date, irrespective of the current market value of the underlying, if the buyer chooses to exercise the option. The buyer pays the seller a premium in exchange for this right.

Example of a seller



What risks are associated with options?
Different types of option are subject to different risks. A call option is said to be "in the money" when the current market value of the underlying is above the strike price. A put option is in the money if the current market value is below the strike price. Generally speaking, if the market value of the underlying falls, so does the value of a call option. The value of a put option, meanwhile, tends to fall if the market value of the underlying rises. Normally, the less an option is in the money, the larger the fall in the option's value. In such cases, the value normally falls much more sharply close to the expiry date. The value of a call option can drop even when the market value of the underlying remains unchanged or rises. This is the case, for instance, when the time value of the option falls, when supply and demand factors are unfavourable or when changes in volatility have a greater effect than changes in market value.
The price of an option depends on its intrinsic value and on what is referred to as the time value. The latter is determined by a

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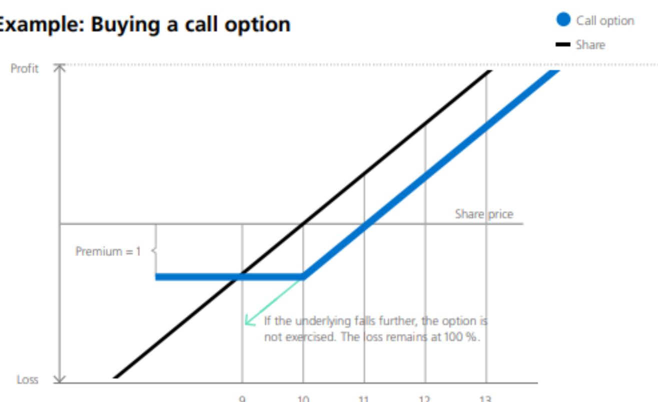
variety of factors, including the option's remaining term and the volatility of the underlying. The time value reflects the chance that the option will be in the money.
It must be borne in mind that options can lose value or even become completely worthless as their expiry date approaches. From the buyer's point of view, this means a loss equal to the premium paid for the option. The loss risk for the seller of a call option is theoretically unlimited.

How leverage works

An option costs less than its underlying, but its gains and losses are heavily dependent on the underlying. Any change in the market value of the underlying will result in a greater change in the price of the option. This is known as the leverage effect. It allows investors to profit disproportionately from increases (call option) or decreases (put option) in the price of the underlying.



Leverage due to small amount of invested capital

The option gives the buyer the right to buy a share at a price of 10.
Invested capital (premium) = 1

Calculation:
The share price is 12. The option buyer buys the share for 10 and can then sell it for 12, leaving 2. Minus the premium of 1, this gives a profit of 1, which is equal to 100 % of the invested capital.

Share price	Share profit / loss	Option profit / loss
10	0 %	-100 %
11	+10 %	0 %
12	+20 %	+100 %
13	+30 %	+200 %

Types of Options

Warrants

Warrants are options in securitised form that are traded on an exchange or over the counter. Exchange-traded warrants frequently involve bilateral settlement without the involvement of a central clearing house. Normal options are standardised as regards the strike price, ratio of options to underlying and term. With a warrant, the issuer can determine these itself, however it usually does in line with investors' preferences in order to ensure sufficient demand for the warrant.

Exchange-traded options

Exchange-traded options are not issued as securities but are traded on an exchange and settled via a central clearing house. The exchange or central clearing house is a counterparty in the transaction, whereas in a warrant transaction the issuer is the counterparty itself.

Over-the-counter (OTC) options

OTC options are neither securitised nor traded on-exchange. They are agreed directly off-exchange between the seller and the buyer. Investors who wish to cancel (close out) an option of this type before the expiry date must make a corresponding offsetting trade with the counterpart.

American-style options

American-style options can in principle be exercised on any trading day up to the expiry date.

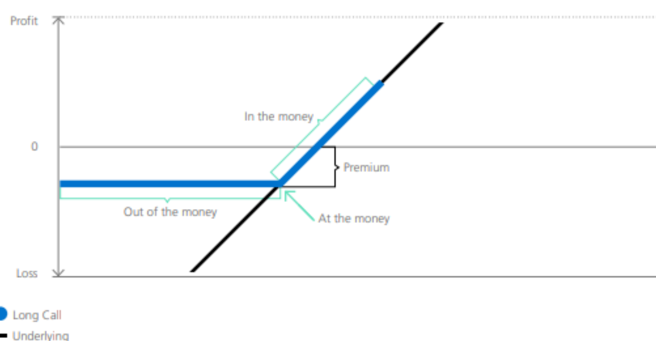
European-style options

European-style options can only be exercised on the expiry date, in other words the date set out in the contract. However, this does not normally affect their tradability on the secondary market (e.g. via an exchange).

Value of an option

The price of an option depends on its intrinsic value and on what is referred to as the time value (see above). The latter is determined by a variety of factors, including the option's remaining term and the volatility of the underlying. The time value reflects the chance that the option will be in the money. It is higher for options with a long duration and a very volatile underlying and for options that are at the money. An option can be in the money, out of the money or at the money.

Example: Call option in the money, at the money, out of the money



Option "in the money"

A call option is in the money if the current market value of the underlying is above the strike price. A put option is in the money if the current market value of the underlying is below the strike price. If an option is in the money before expiry, it has an intrinsic value.

Option "out of the money"

A call option is out of the money if the current market value of the underlying is below the strike price. A put option is out of the money if the current market value of the underlying is above the strike price. In this case, the option has no intrinsic value.

Option "at the money"

If the current market value of the underlying is the same as the strike price, the option is at the money and has no intrinsic value.

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Special risks

As the seller (writer) of a covered call option

If an investor sells a call option and holds the requisite quantity of the underlying, the call option is described as covered. If the current market value of the underlying exceeds the strike price, the investor loses out on the capital gain as a result of having to deliver the underlying to the buyer at the strike price, rather than selling the underlying at the (higher) market value. The investor must have full power of disposal over the underlying if there is a chance that the option will be exercised. The underlying must not be pledged for other purposes, otherwise the risks are essentially the same as for selling (writing) an uncovered call option (see next paragraph).

As the seller (writer) of an uncovered call option

If an investor sells a call option but does not hold the requisite quantity of the underlying, the call option is described as uncovered. The loss risk for an option with physical delivery (financial instruments can provide for delivery of, for example, the physical asset underlying an option, with the associated settlement risk) is made up of the difference between the price the investor must pay for the underlying and the strike price the buyer pays for it – minus the premium the buyer paid for the option. The loss risk for an option with cash settlement is made up of the difference between the price of the underlying and the strike price – minus the premium the buyer paid for the option.

Since the market value of the underlying can move well above the strike price, the loss risk cannot be determined and is theoretically unlimited.
With American-style options in particular, investors must also be prepared for the possibility of the option being exercised in the midst of a highly unfavourable market situation, resulting in a heavy loss. Where there is an obligation to provide physical delivery, it may be very expensive or even impossible to acquire the underlying.
Investors must therefore be aware that the potential loss can be far greater than the value of the collateral (margin) deposited either when entering into the contract or thereafter.

As the seller (writer) of a put option

An investor selling a put option must be prepared for substantial losses if the market value of the underlying falls below the strike price that must be paid to the seller. The loss risk in this case is made up of the difference between these two values minus the premium the buyer paid for the option.
An investor selling an American-style put option with physical delivery undertakes to buy the underlying at the strike price when the buyer exercises the option, even if the underlying can only be sold with considerable difficulty or at a heavy loss or cannot be sold at all. The potential losses can thus be far greater than the value of any collateral (margin) that has been deposited. The maximum loss is equal to the strike price multiplied by the quantity of underlying that must be bought.

With covered options

Covered options do not contain a hedge against falls in the market value of the underlying. However, writing a traditional, covered call option or factoring the proceeds from writing a call option into the price of a synthetic covered option reduces any loss on the underlying's market value compared with a direct investment in the underlying. In effect, the option premium limits any loss on the market value of the underlying.

Either cash settlement or physical delivery of the underlying takes place on the expiry date. If the market value of the underlying on expiry is higher than the strike price, the holder of an option with cash settlement receives a specified cash amount.
If the market value of the underlying is lower than the strike price, the holder of an option with physical delivery receives the underlying and thus bears the full risk associated with it.

DISCLAIMER

This information sheet contains an extract from the brochure “Risks Involved in Trading Financial Instruments” published by the Swiss Bankers Association (SBA), the complete version of which can be consulted at www.swissbanking.org or on the Bank’s website (www.corner.ch).

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