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# Derivates

This document contains information about the properties of derivates and informs you about potential benefits and risks of this class of products. These principles can support you in your investment decisions. Please contact your Client Advisor if you would like further information or have any questions.

## General Information

**Derivates** are financial instruments for which the price is derived from a market-based reference value. The reference value, or underlying asset, may consist of equities, bonds, precious metals, commodities, reference rates such as currencies, interest rates, and indices, or of loans and other loss events. Derivates are arranged as forward transactions in which two parties determine the conditions for a future transaction in terms of underlying asset, maturity, subscription ratio, contract size, and price.

**Short sale:** If an investor sells an underlying asset forward without owning it, this is referred to as a short sale. The investor must then repurchase the asset, depending on price level, at a price that may be unfavourable in order to meet the obligation to deliver on the maturity date.

**Leverage effect:** A price change in the underlying asset may trigger a much larger change in the price of the option. The investor participates to an above-average extent in the development of the underlying asset.

**Delivery forms:** At contract conclusion a physical delivery or a cash settlement can be agreed on. In the case of physical delivery, the underlying asset is delivered upon maturity at the contractually agreed conversion ratio. In case of a cash settlement, the difference between the exercise price and the price of the underlying asset upon maturity is paid out.

## Types of derivates

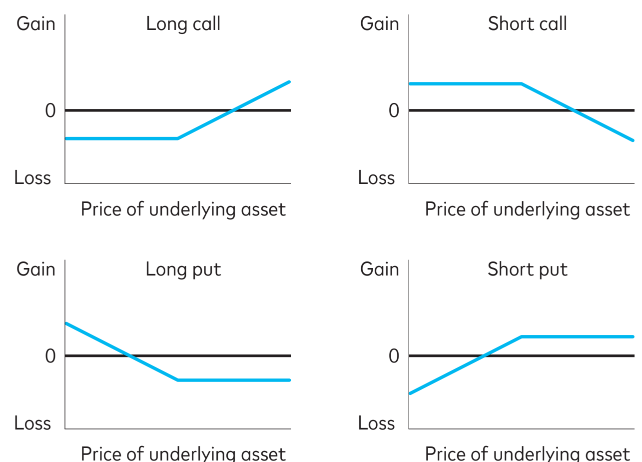
**Options** come in the form of purchase options (call options) and sell options (put options). They are standardized and traded on futures exchanges. An exception are OTC (over-the-counter) options, which are traded directly between two parties.

The buyer of an option acquires the right, but not the obligation, to purchase (call) or sell (put) a specific quantity of a certain underlying asset on or before a fixed deadline at an agreed price. The buyer must pay an option premium for this. If the buyer exercises the right, the seller of the option is obligated to deliver (call) or assume (put) the underlying asset. The seller must hold for the entire period either the corresponding quantity of the underlying asset or other securities (margin). The transaction can be settled through conclusion of a congruent counter transaction. If the buyer does not exercise the right, the option lapses.

A distinction is made between American and European options. American options may be exercised on any trading date up to the date of maturity. European options may only be exercised on their date of maturity, but may be traded beforehand over the secondary market.

The following illustration depicts the payment curves of options:

**Long/Short Call/Put Options**




For buyers (long) of a call option (right to purchase), the profit potential is theoretically unlimited. The investor expects that the price of the underlying asset will increse. For buyers of a put option (right to sell), the profit potential corresponds to a maximum of the exercise price less the option premium. The investor expects that the price of the underlying asset will decrease. The loss of risk for the buyer of call and put

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options is limited to the amount of the option premium to be paid, since only a right, but not an obligation to exercise it, is acquired with the option.

During the period, the value of a call option decreases if the underlying asset decreases. Put options behave in the opposite way. But the value of options may also decrease even when prices do not change or in case of a change in the price of the underlying asset that is favourable for the investor, particularly if the time value of the option decreases or supply and demand develop in an unfavorable way.

For sellers (short) of a call or put option, the profit potential is limited to the amount of the option premium.

The potential for loss for the seller of a call option (obligation to deliver), on the other hand, is unlimited. For sellers of a put option (obligation to purchase), the loss potential corresponds to the maximum of the exercise price less the option premium.

**Futures** are reciprocally binding forward transactions that are standardized and traded on a future exchange. Both parties agree to buy or sell a certain quantity of an underlying asset at a predetermined time and price. A distinction is made in this connection between underlying assets that are financial instruments (financial futures) and those that are commodities (commodity futures). The buyer assumes the long position and the seller, the short position. The transaction can also be settled through conclusion of a counter transaction.

For futures, a security must be provided (margin). Depending on the price development of the underlying asset, this must be adjusted. If the margin cannot be adjusted (additional coverage obligation), the transaction will be settled.

For buyers of futures contracts, the profit potential is unlimited. The potential for loss is limited to the amount of the exercise price. For sellers, the profit potential is limited to the amount of the exercise price. The potential for loss for sellers, on the other hand, is unlimited.

**Forwards** are the off-exchange traded equivalent of futures. They may be standardized or traded directly between the two parties. A settlement is possible through conclusion of a counter transaction.

**Swaps** are agreements between two parties to exchange payment flows (cash flows), currencies (currency swaps), or interest payments (interest rate swaps) at certain times. In the case of interest rate swaps, one party agrees to make payments for a specified period in the amount of a fixed interest rate on a defined nominal amount. In exchange, this party receives payments in the amount of a variable interest rate on the nominal amount for the same period. The nominal amount will not be exchanged. There are also other interest rate interest swaps (fixed versus fixed and variable versus variable). In the case of currency swaps, interest payments and a capital amount in different currencies are exchanged.

## Potential benefits

**Hedging:** Derivates can be used for hedging of certain positions against losses in value or the occurrence of unwanted developments (e.g. interest rate changes). A transfer of risk takes place.

**Investments with low capital input and leveraging effect:** With a low amount of capital, an investor can participate to an above-average extent in the development of the underlying assets.

**Speculation:** An investor who expects changes in the market (e.g. interest rate changes) can take on positions specifically.

## Potential risks

Because derivatives can be very complex products, they are subject to special risks.

**Risk of loss:** Depending on the type of investment, negative price development may result in a partial or total loss from the perspective of the investor. With the short sale of a call option, the theoretical loss is unlimited, since the price of the underlying asset to be delivered can theoretically increase indefinitely.

**Market risk:** The value of a derivative may drop during the period. This may depend on various factors, such as the remaining period (time value), the exercise price (in the case of options), the interest rate level, the dividends, and the underlying asset (current price and volatility). A change in the price of the underlying asset may cause a much larger loss in the value of the derivative due to the leverage effect. Through changes in the volatility of the underlying asset, the derivative may suffer a loss in value. This loss in value is also possible when the price development of the underlying asset is constant. The special dependence on the underlying asset is referred to as **underlying asset risk.**

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**Risk in case of physical delivery:** This form of delivery may involve a specific risk for the buyer and for the seller. If the underlying assets must be physically delivered upon maturity in the case of a short sale, it may be very expensive or even impossible to purchase them. For example, if the underlying assets are to be physically delivered in the caes of a forward purchase, the buyer must resell or deposit them. This may result in additional costs for the investor.

**Exercise risk:** For sellers of American options, there is a risk that the option may be exercised at a point that is unfavourable to the seller.

**Liquidity risk:** OTC derivates are individually concluded agreements and therefore illiquid. The sale or settlement of an OTC derivative may be difficult or expensive.

**Counter-party risk:** Because a derivative transaction is always concluded with another party, this results in a risk of loss due to the business partner's inability to pay.

**Risk of a "margin call":** In the case of futures and some forwards, a margin (security provision) must be deposited. If the investment develops negatively with respect to the investor, the investor may be required to provide additional security. This requirement is referred to as a margin call. If the investor is not able to satisfy this requirement, the derivative must be settled by the broker to prevent further losses. In this way the loss for the investor incurred to that point is realized.

**Foreign currency risk:** A foreign currency risk exists if the underlying assets are traded in a different currency from the derivative, or the derivative itself is traded in a different currency from the local currency of the investor. It is possible that the price gain of an investment in foreign currency may result in a total loss for the investor due to exchange rate fluctuations. Exchange rates can fluctuate substantially.

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