

## Options Types

### American option

An option which can be exercised at any time before expiration.

### Asian option

An option whose payoff does not depend on the underlying asset's value on the exercise date but on its average value over a specified period of time.

### Asset-or-nothing call option

An option whose payoff equals the value of the underlying asset, provided it exceeds the strike price. Asset-or-nothing call options are frequently written as (binary) barrier options.

### Asset-or-nothing put option

An option whose payoff equals the value of the underlying asset, provided it is below the strike price. Asset-or-nothing put options are frequently written as (binary) barrier options.

### Barrier option

An option which is activated or deactivated once the value of the underlying asset goes above or below an agreed limit. The investor must buy a barrier option at the premium  $t \frac{1}{4} 0$  without obtaining a guarantee that he or she will actually obtain or retain the right to exercise the option before expiration. The holder frequently receives a small rebate if the option is never activated. We can distinguish between three main types of barrier options:

#### 1. Knock-in barrier options

Knock-in options must be paid in advance, yet they expire worthless unless the value of the underlying asset breaches a predefined barrier (also called the instrike).

**Down-and-in call or put option:** the right to buy or sell the underlying asset is activated, i.e. "knocked in" once its value has fallen below a predefined barrier.

**Up-and-in call or put option:** the right to buy or sell the underlying asset is activated, i.e. "knocked in" once its value has risen above a predefined barrier.

#### 2. Knock-out barrier options

Knock-out options only pay off if the value of the underlying asset breaches a predefined barrier (also called the outstrike).

**Down-and-out call or put option:** the holder of the option loses the right to buy or sell the underlying asset once its value has fallen below a predefined barrier.

**Up-and-out call or put option:** the holder of the option loses the right to buy or sell the underlying asset once its value has risen above a predefined barrier.

#### 3. Double barrier options

Double barrier options are knocked in or out depending on whether or not the value of the underlying remains within predefined limits. See also:

Up-and-out down-and-out option

Up-and-in down-and-in option

### Bermuda option

An option which can be exercised on a number of predetermined occasions.

### Binary barrier option

A barrier option with a payoff similar to that of a binary option. In the case of knock-in barrier options, we distinguish between two types: at hit: payoff occurs immediately once the instrike is reached; at expiry: payoff occurs once the life of the option expires.

**Binary option**

An umbrella term for cash-or-nothing options and asset-or-nothing options.

**Call option**

The right to buy the underlying asset at a specified price on a predetermined date (or dates).

**Call/put provisions**

*Call provision:*

The issuer has the right to buy back (i.e. call) the instrument at preset prices and on predetermined dates. In effect, the issuer has a call option on the instrument.

*Put provision:*

The investor has the right to sell (i.e. put) the instrument to the issuer at preset prices and on predetermined dates. In other words, the investor has a put option on the instrument.

**Cash-or-nothing call option**

An option which gives a fixed payoff once the price of the underlying asset has risen above the strike price. Cash-or-nothing options are frequently written as (binary) barrier options.

**Cash-or-nothing put option**

An option which gives a fixed payoff once the price of the underlying asset has fallen below the strike price. Cash-or-nothing options are frequently written as (binary) barrier options.

**Cliquet option**

A series of consecutive forward start options (i.e. a ratchet option).

**Digital option**

An umbrella term for cash-or-nothing options and asset-or-nothing options.

*Down-and-in option*

A knock-in option which is activated only once the value of the underlying asset has fallen below a predefined barrier (instrike) during the life of the option (see also: Barrier option).

*Down-and-out option*

A knock-out option which is terminated once the value of the underlying asset has fallen below a predefined trigger or barrier (the instrike) during the life of the option (see also: Barrier option).

**European option**

An option which can only be exercised at expiration.

**Forward start option**

An option whose strike price is determined only during its life (according to a rule defined in the contract).

**Put option**

The right to sell the underlying asset at a specified price on a predetermined date (or dates).

**Quanto option**

An option on an underlying asset denominated in a foreign currency with a predetermined foreign exchange rate. Example of a quanto call option: On the expiration date of a call option on a stock denominated in USD, the difference between the strike price and the current stock price is paid out not in USD but in EUR at a 1:1 ratio, regardless of the prevailing USD/EUR exchange rate.

**Ratchet option**

A series of consecutive forward start options. Right to issue additional tranches The issuer's right to issue further tranches of an instrument may or may not involve the right to sell the new instruments to the investors at a preset price, with the investors obliged to take delivery (i.e. buy) the instrument. If the right is limited to an issuance privilege, the costs of issuing the instrument are merely reduced. In the latter case, the issuer actually has a put option on the instrument.

**Strike price**

The price at which the underlying asset can be purchased or sold when the option is exercised.

**Underlying asset**

The instrument which the parties agree to exchange in a derivative contract.

**Up-and-in down-and-in option**

A knock-in option which is activated only once the value of the underlying asset has risen above a predefined upper limit or fallen below a predefined lower limit (the instrikes) during the life of the option (see also: Barrier option).

**Up-and-in option**

A knock-in option which is activated only once the value of the underlying asset has risen above a predefined trigger or barrier (the instrike) during the life of the option (see also: Barrier option).

**Up-and-out down-and-out option**

An option which is terminated once the value of the underlying asset has risen above a predefined upper limit or fallen below a predefined lower limit (the outstrikes) during the life of the option (see also: Barrier option).

**Up-and-out option**

A knock-out option which is terminated once the value of the underlying asset has risen above a predefined trigger or barrier (the outstrike) during the life of the option (see also: Barrier option).

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