Arbitrage spreads

Arbitrage spreads refer to standard option strategies like vanilla spreads to lock up some arbitrage in case of mispricing of options. Although arbitrage used to exist in the early days of exchange option markets, these cheap opportunities have almost completely disappeared, as markets have become more and more efficient. Nowadays, millions of eyes as well as computer software are hunting market quote screens to find cheap bargain, reducing the life of a mispriced quote to a few seconds.

In addition, standard option strategies are now well known by the various market participants. Let us review the various standard arbitrage spread strategies

Like any trades, spread strategies can be decomposed into **bullish** and **bearish** ones. Bullish position makes money when the market rallies while bearish does when the market sells off. The spread option strategies can decomposed in the following two categories:

- Spreads: Spread trades are strategies that involve a position on two or more options of the same type: either a call or a put but never a combination of the two. Typical spreads are bull, bear, calendar, vertical, horizontal, diagonal, butterfly, condors.

- Combination: in contrast to spreads combination trade implies to take a position on both call and puts. Typical combinations are straddle, strangle[1], and risk reversal.

Spreads (bull, bear, calendar, vertical, horizontal, diagonal, butterfly, condors)

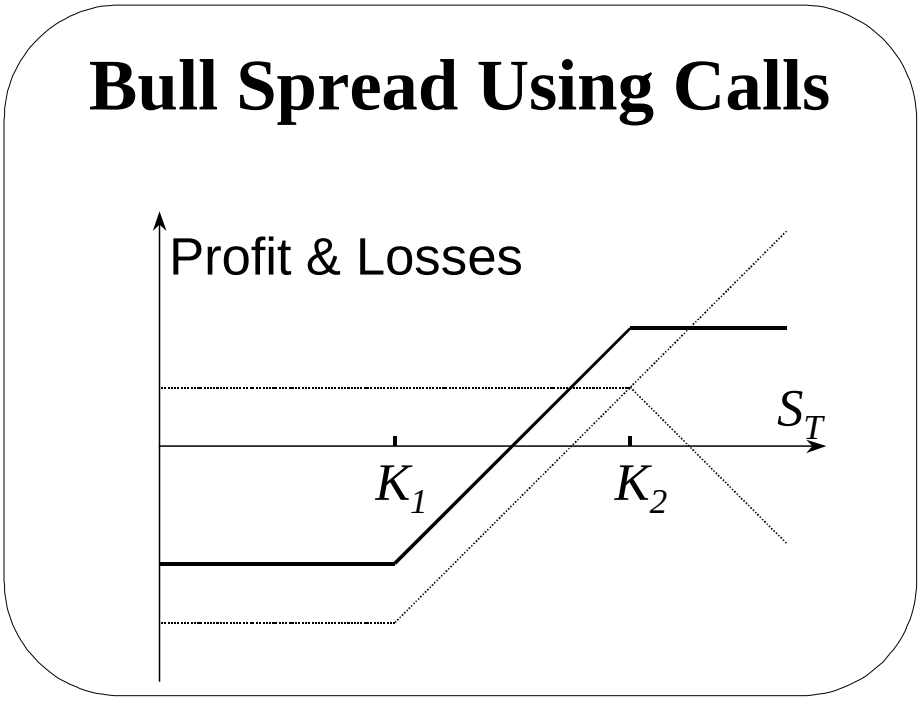
Spread trades are a way of taking views on the difference between two or more assets. Because the trading strategy plays on the relative difference between different derivatives, the risk and the upside are limited. There are many types of spreads among which bull, bear, and calendar, vertical, horizontal, diagonal, butterfly spreads are the most famous.

Bull spread

One of the most popular spread, the **bull spread** aims at being bullish with a lower upside but also a lower premium compared to the call itself. Long a call and short one with higher strike and same maturity creates a bull spread. Taking the two calls out-of-the money leads to an aggressive bull spread. In this case the strategy costs very little but has little chance to end in the money. Medium to conservative call spreads are with the long call in-the-money and the short call being still out-of-the money while more conservative is with the two calls in-the-money. Because of the call put parity, the bull spread can also be created by long a put and short another put with same maturity and higher strike. The difference between call spread and put spread lies in the fact that bull call spread strategy requires to pay a premium (for a

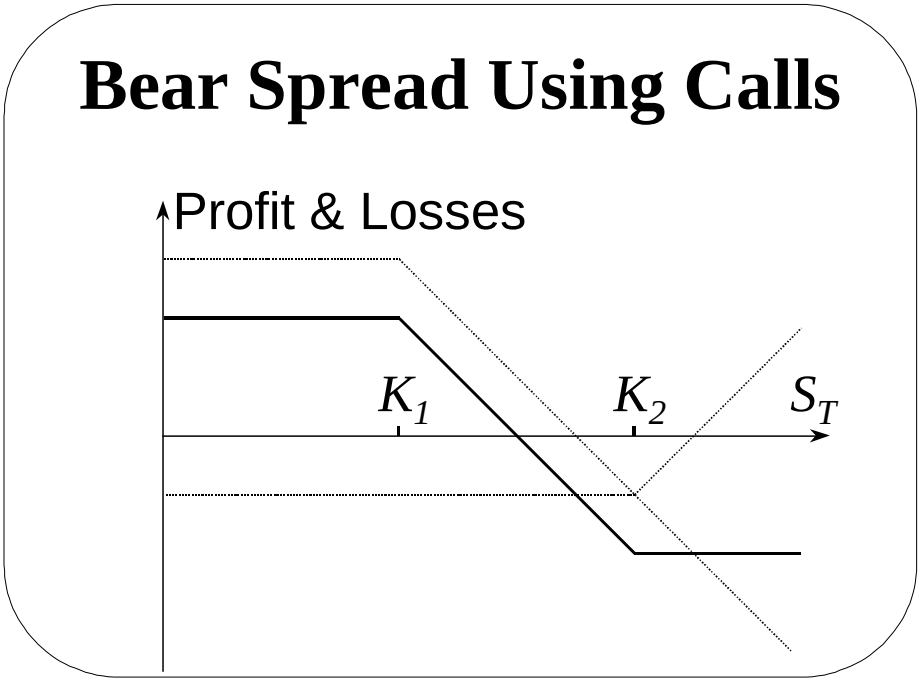
[1] Also referred in interest rates derivatives a collar.

zero or positive payoff) while the put spread version provides a positive cash flow up front (for a zero or negative payoff)



Bear spread

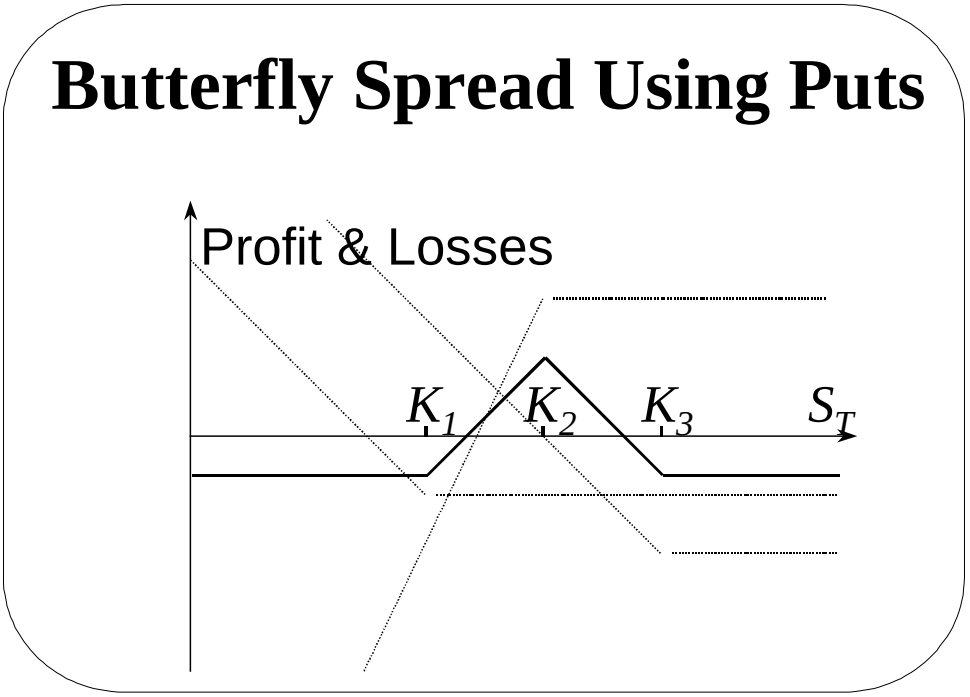
Traders may have bearish view on the market and may want to enter into a **bear spread**. Long a call and short another one with smaller strike and same expiry date creates a bear spread. Like bull spreads, bear spreads can be executed with either call or puts. Also, bear spreads limit the upside but also the risk via the premium to be paid. Bear spreads created with puts require an initial investment while bear call spread leads to a premium



Butterfly spread

Butterfly spreads involve three different options[2] and are a way of speculating on a narrow range. Long a call and another one with same expiry date but a higher strike and short two calls with same expiry date but a strike between the one of the long options creates a butterfly. Generally the strike in the middle is closed to the forward value or to the spot. In these circumstances, the butterfly trade is a way of speculating that the stock or the underlying will not move much. Obviously, the butterfly spread can be also created with put options. Bullish butterfly spreads are with high middle strike (in comparison with the today spot), while bearish are with low middle strike.

[2] Three different options but a position in four options



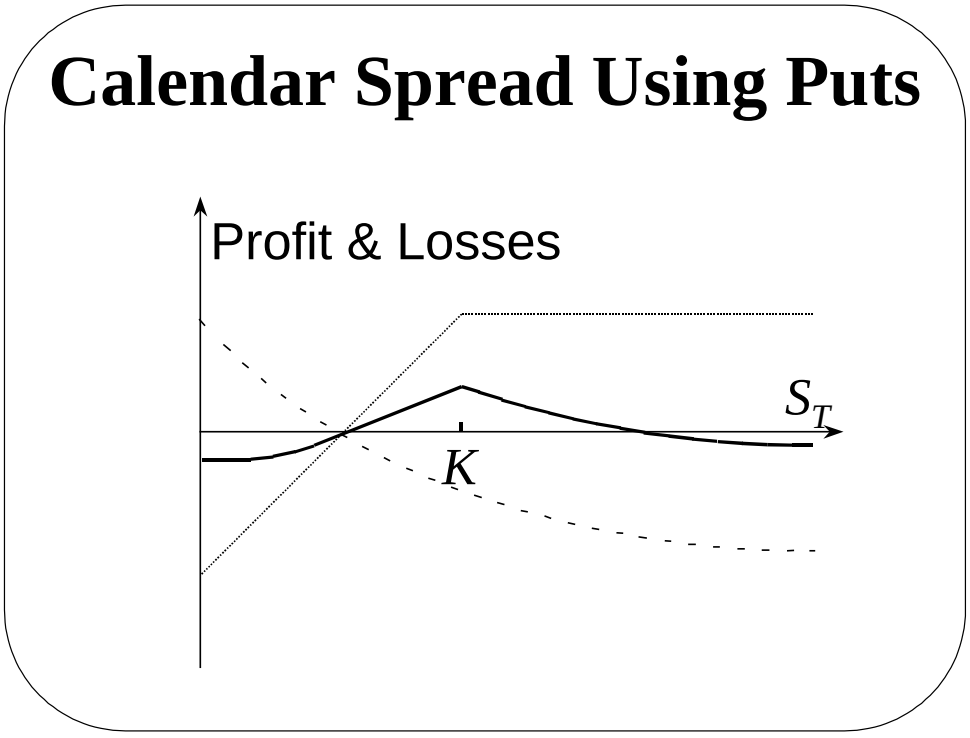
Condors

Condors are very similar to butterfly except that instead of buying two calls at the same strike, one buys two calls at slightly different strike. Calls or puts can be indifferently used. A condor costs about the same as the equivalent butterfly, the only difference being for the outcome between the two middle strikes. Condors can be seen as a variant of the butterfly spread.

Calendar spreads

While all the strategy above have always used options with the same maturity but different strikes, **calendar spreads** are trades playing with the opposite parameters. Calendar spreads are the difference between two calls or puts with the same strike and different maturity, where the call with the short maturity is bought while the longer maturity call is sold. Because of the greater time value of the short call, calendar spread requires an initial investment.

Their payoff looks similar to the one of butterfly but with a more convex profile. Calendar spread assumes that the underlying will stay close to the strike.



Reverse calendar spread is the opposite trading strategy of a calendar spread. It is long one call or put with a given strike and short another call or put with the same strike and a shorter maturity. This trading strategy is appropriate if the investor/trader thinks that the asset will move significantly from the strike.

More generally, spreads on option with same expiry and different strikes are sometimes called **vertical spreads**. Vertical spreads therefore include bull,

bear, and butterfly spreads. The term vertical refers to the fact that calls and puts with the same expiry are often quoted in the same column (like in newspapers or in Bloomberg or Reuters)

Spreads on options with same strike but different expiry are sometimes called **horizontal spreads**. Horizontal spreads include calendar spread, reverse calendar spread. Similarly the term horizontal refers to layout of calls and puts with same strike on the same row.

Spreads on options with different strike and maturity are called **diagonal spreads**. Diagonal spreads can always be decomposed in terms of strategies involving vertical spreads and horizontal spreads

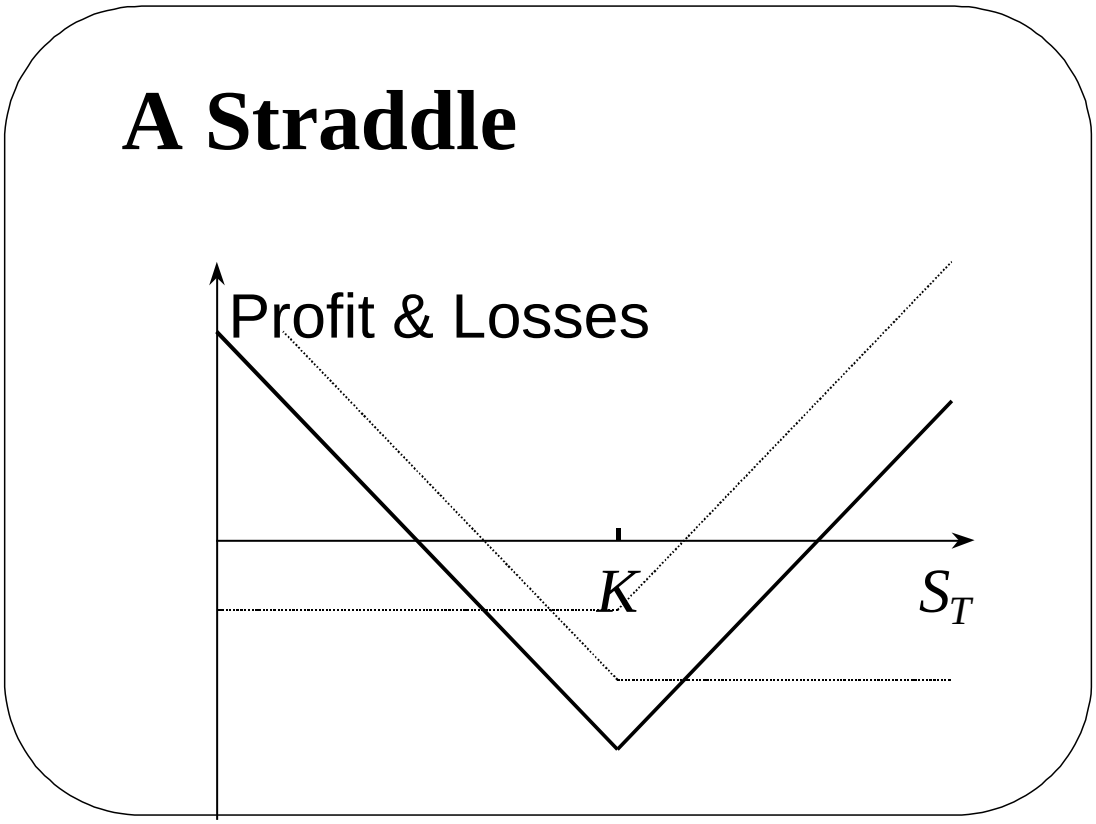
Combinations: straddle, strangle, and risk reversal

A combination is a trading strategy that involves both calls and puts on the same underlying. The most famous combinations are straddle, strips and straps, strangles and risk reversal

Straddle

A **straddle** is a trading strategy to take advantage of large market move of the underlying asset. It consists in buying both a call and a put with same expiry and same strike. Large move could be the result of a take-over bid, a major lawsuit, important economic news or an indicator publication. However, if the market already expects this large jump in the price, call and put prices may already reflect this. As a result, the straddle may be already costly. A

successful straddle comes when other market participants do not share the trader's belief of a large move.



Straddle is neutral to a raise or a fall of the underlying price. However, a trader/investor may think that the large move may not be symmetric as she anticipates the change of a raise to be higher. In this case, the trader/investor may be interested in an option strategy similar to a straddle but with more upside when the asset price raises. This is precisely what a strap is aiming at. A **strap** consists in long two calls, and short one put with the same maturity and strike. Similarly, a **strip** allows having a bias for a fall.

A more aggressive strategy to the straddle one is to use a call with a given strike and a put with a smaller strike. This is referred to as a **strangle**.

Entry category: options

Scope: options

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