

Andreas Krause

Investment strategies with options

- Options can be used to hedge positions, but they can also be used to as building blocks to generate payoff profiles at maturity of the option(s) that suit the needs of the investor.
- We will look at some of the most common such option strategies.

Combining options

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- An investment strategy is to combine different options, usually with the same time to maturity to generate profits if a certain scenario has been obtained and limit the losses if it does not materialise.
- ▶ The aim is to combine these different options such that at maturity they generate a specific payoff profile.
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 - We may combine put and call options to achieve these payoff profiles,
 - but also long and short positions in options, where short position is to sell an option.
 - We might also use options with the same or with different strike prices.
- ▶ These payoff profiles are developed to suit the needs of the investor and their investment strategy.
- We will now explore some of the most common of such investment strategies.

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- ▶ We can **combine** options and generate different payoff profiles at maturity of the option

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- ▶ We combine put and call options

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- ▶ We combine put and call options, **long and short options**

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Synthetic asset

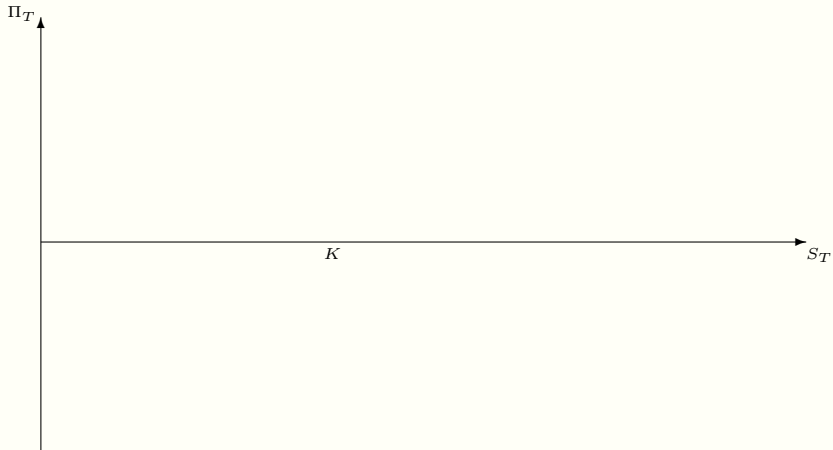
- Let us first consider an investment strategy in which options are used to re-create the underlying asset.
- ▶ We look at the profits the trading strategy generates at maturity of the options for different values of the underlying asset.
- ▶ We choose a strike price as the benchmark for our profits and losses.
- ▶ The strategy consists of selling a put option with this strike price
- ▶ and purchasing a call option with the same strike price.
- ▶ If we combine these two options, we obtain a payoff profile that is like the underlying asset.
- We can thus use options to recreate the payoff profile of the underlying asset.

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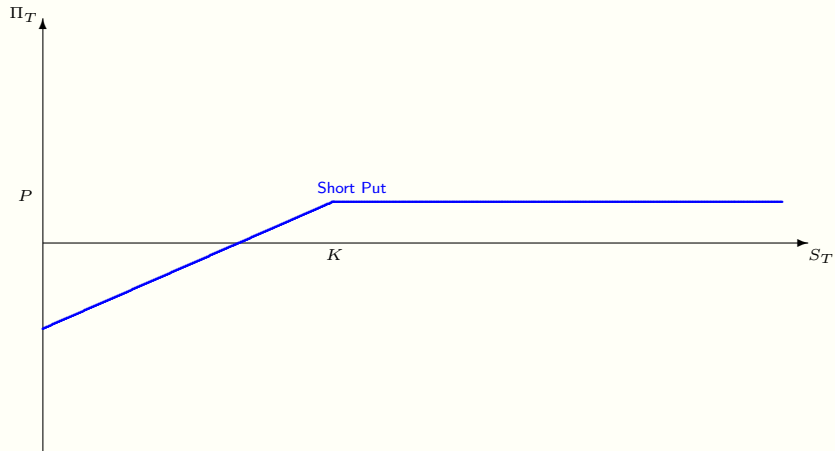
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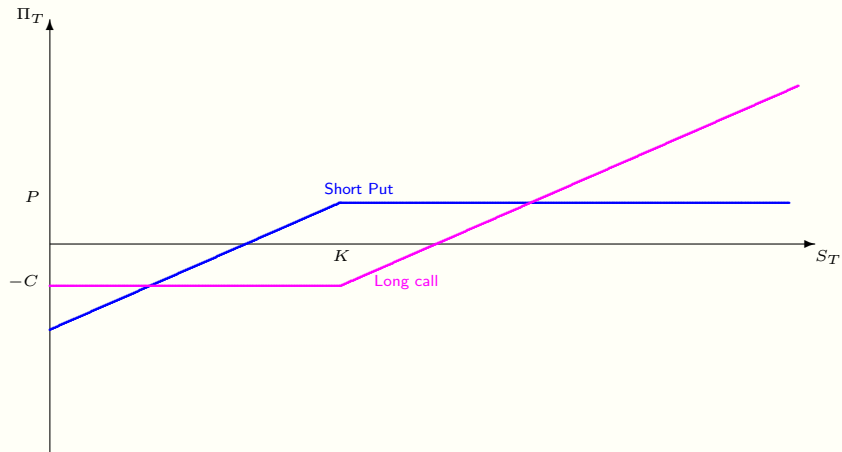
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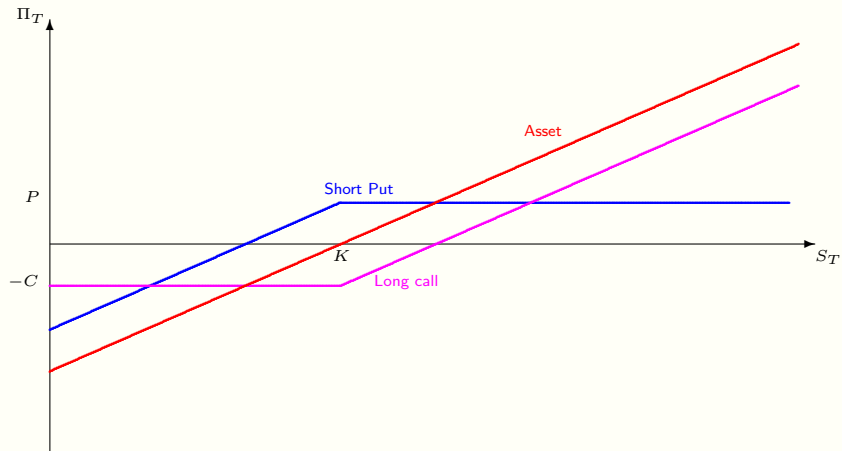
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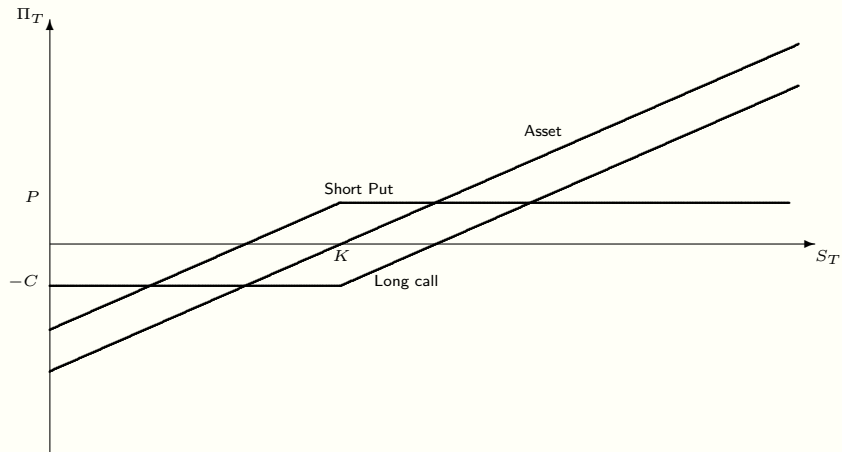
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Reason to re-create the underlying asset

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 - The reason an investor might use options to recreate the underlying asset is that the investor is unable to invest directly into the asset.
 - If he wants to make such an investment as part of his portfolio strategy, he can obtain the risk exposure of this asset using options.
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 - An investor might not be able to invest into an asset direct due to regulatory constraints imposed.
 - There might be capital controls that prevent the investment into a country overall, prevent the withdrawal of investments, or limit investments. Using options might be a way around such regulations.
 - Many countries also have restrictions on investment into companies of national importance, be that in defense, infrastructure, or media.
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 - In other cases, investors might deliberately avoid investing into the asset directly.
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 - In case of stocks, they do not gain voting rights, limiting their influence on the company; however, in most cases investors are not seeking such influence.
- We see that options can be used to circumvent restrictions on the purchase of assets.

Reason to re-create the underlying asset

- ▶ The underlying asset might **not be available** to an investors

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Reason to re-create the underlying asset

- ▶ The underlying asset might not be available to an investors, using options he can construct the **same exposure**

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Reason to re-create the underlying asset

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- ▶ Assets might not be available due to **regulatory constraints**

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Reason to re-create the underlying asset

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- ▶ Assets might not be available due to regulatory constraints, such as **capital controls**

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- ▶ Using options can **circumvent these restrictions**

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Bull spread

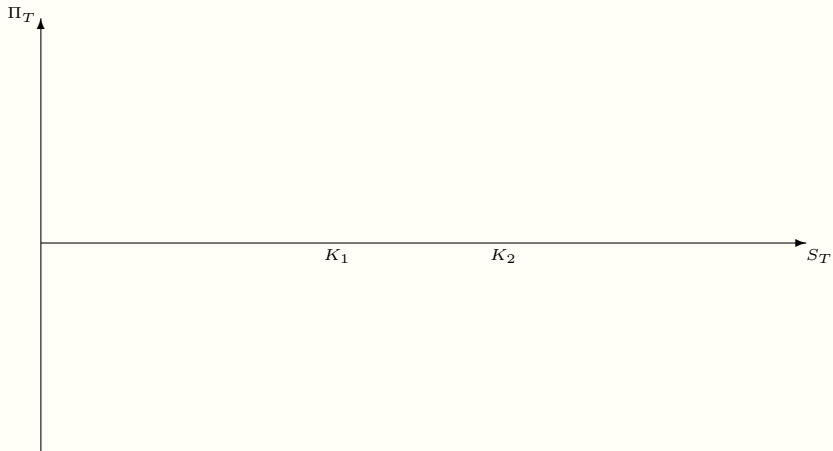
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Bull spread



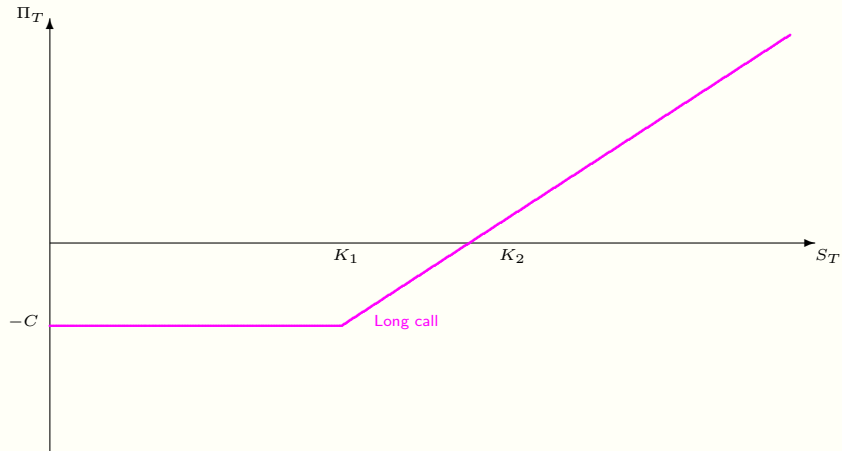
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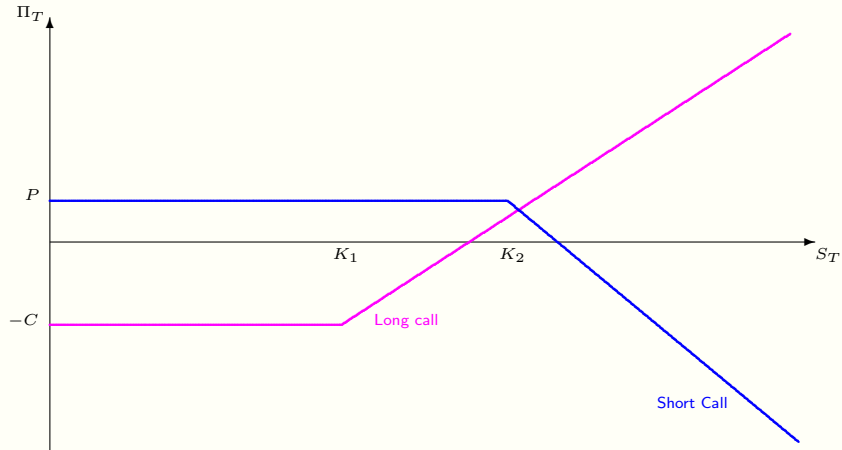
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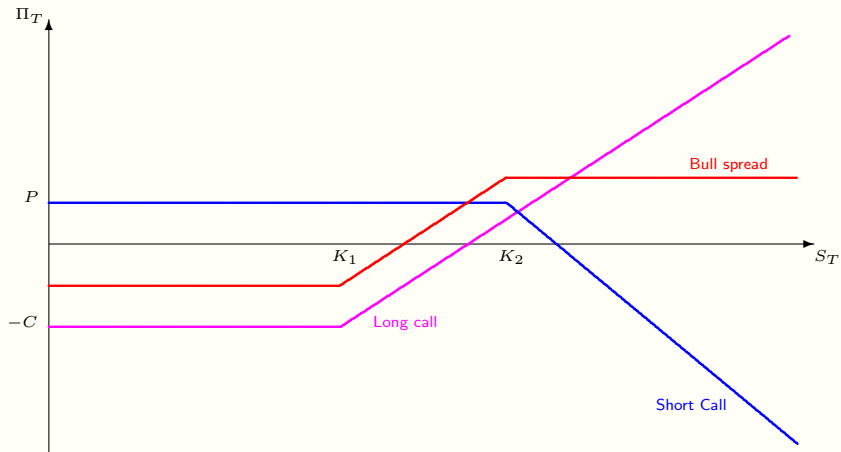
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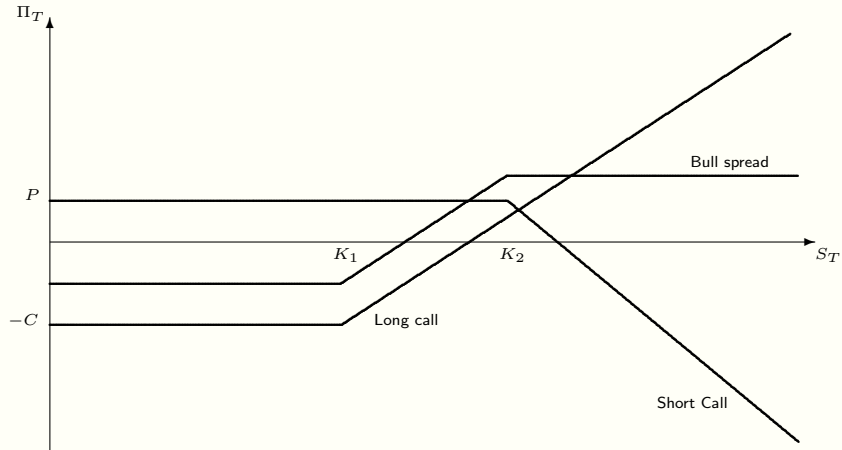
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Limiting profits to reduce losses

Limiting profits to reduce losses

- The bull spread limits losses, but compared to purchasing a long call only reduces losses from the premium as another call option is sold for which a premium is obtained.
 - ▶
 - To use this strategy investor might believe the asset to increase in value and seek to obtain a profit in this case.
 - They also acknowledge that there is a reasonable chance of assets falling in value and seek to protect them from this scenario.
 - ▶ Selling a call generates additional revenue.
 - ▶
 - Selling the other call limits the losses from buying the call due to the additional revenue this brings.
 - The effect it that this strategy will also limit possible gains.
- Such a strategy might be sought if the investor believes the asset value to increase, but does not expect a larger increase and hence even if his profits are not limited would not gain much more profits, while at the same time seeing the risk of the asset price falling as having a non-significant probability.

Limiting profits to reduce losses

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Limiting profits to reduce losses

- ▶ Investors might believe the asset to increase in value, but want to **protect themselves against a fall in value**

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Limiting profits to reduce losses

- ▶ Investors might believe the asset to increase in value, but want to protect themselves against a fall in value
- ▶ By limiting their profits through selling a call, they gain **additional revenue**

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Limiting profits to reduce losses

- ▶ Investors might believe the asset to increase in value, but want to protect themselves against a fall in value
- ▶ By limiting their profits through selling a call, they gain additional revenue
- ▶ This **limits the losses** from the premium of the long call option

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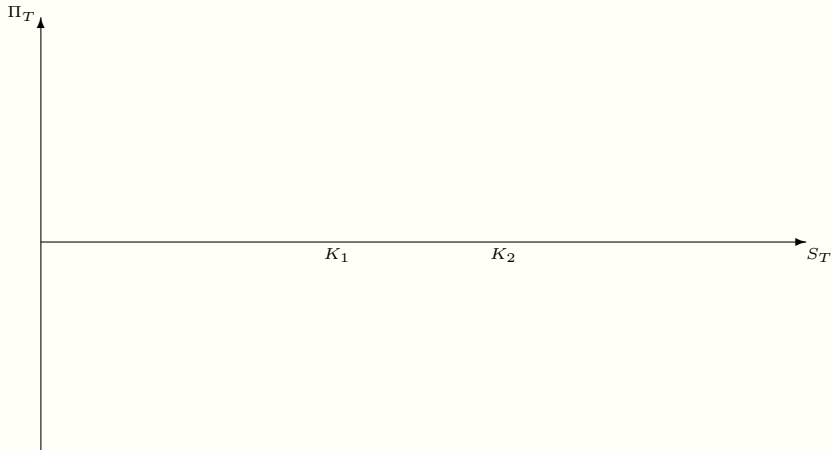
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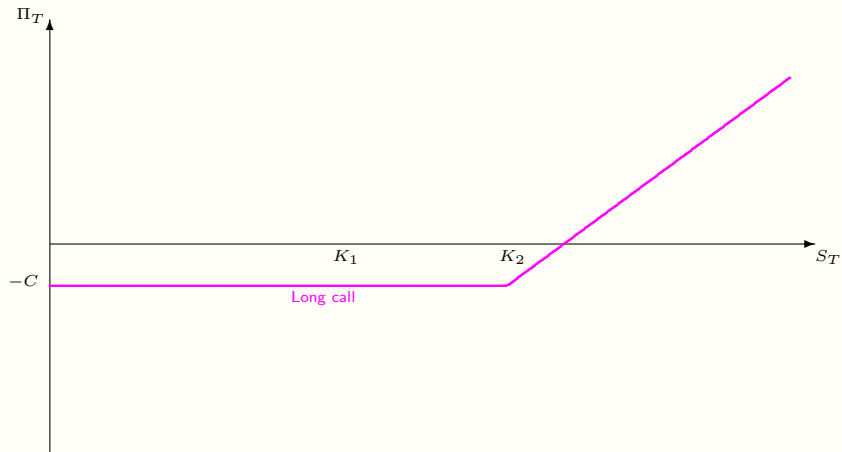
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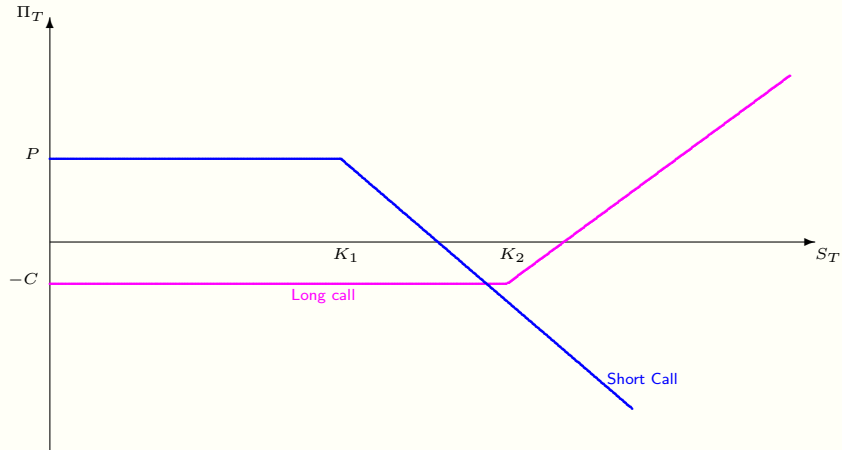
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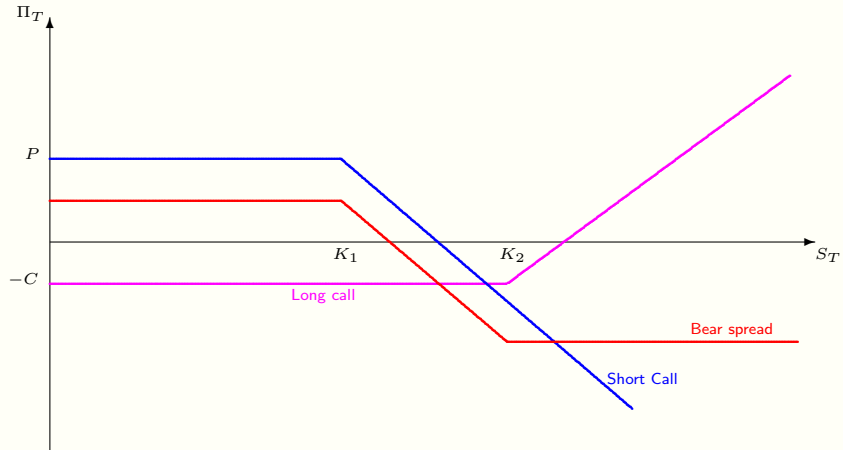
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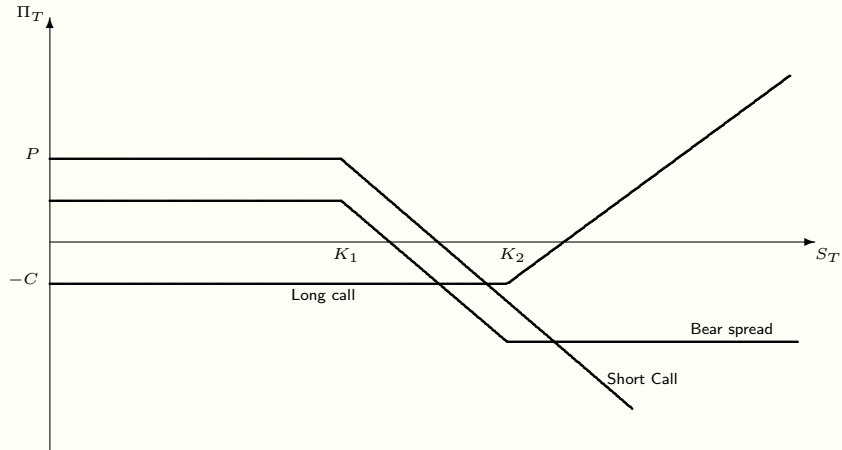
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- The bear spread limits losses, also limits the profits that can be made.
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 - Looking at the payoff profile of a bear spread, it is very similar to a bull spread,
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Straddle

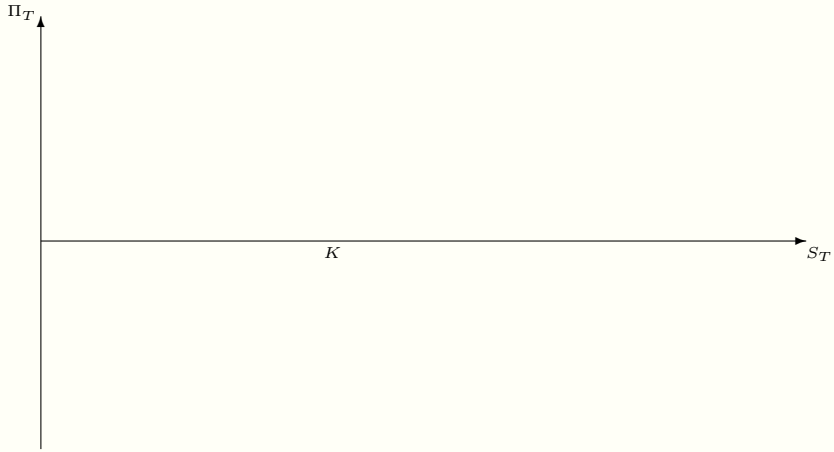
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 - ▶ Both options use the same strike price.
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 - ▶ The resulting payoff profile is known as a straddle.
- The more the price at maturity deviates from the strike price, the higher the profits of the investor; if the price stays close to the strike price, the investor would suffer a loss from paying the option premia.

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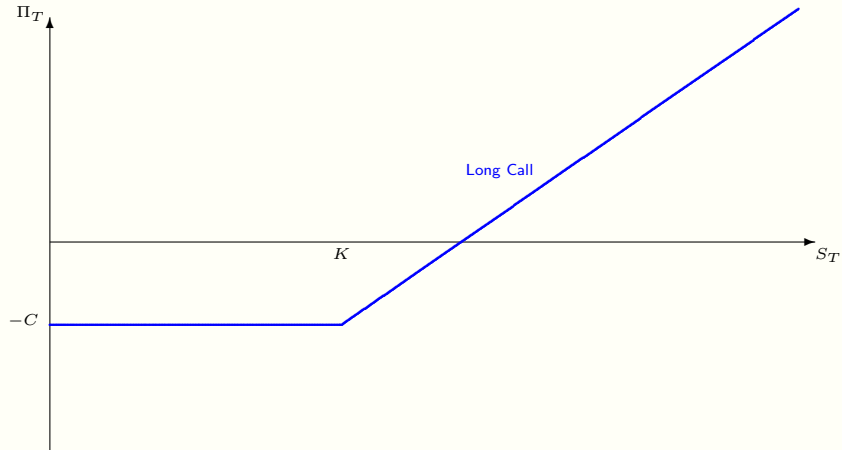
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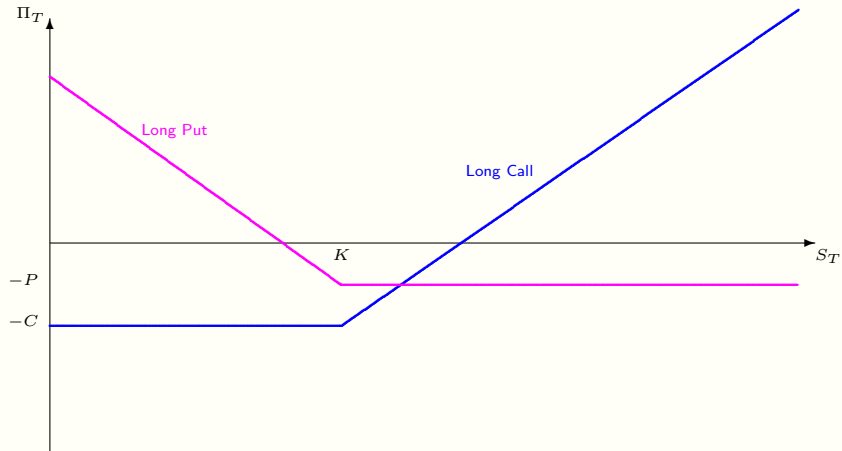
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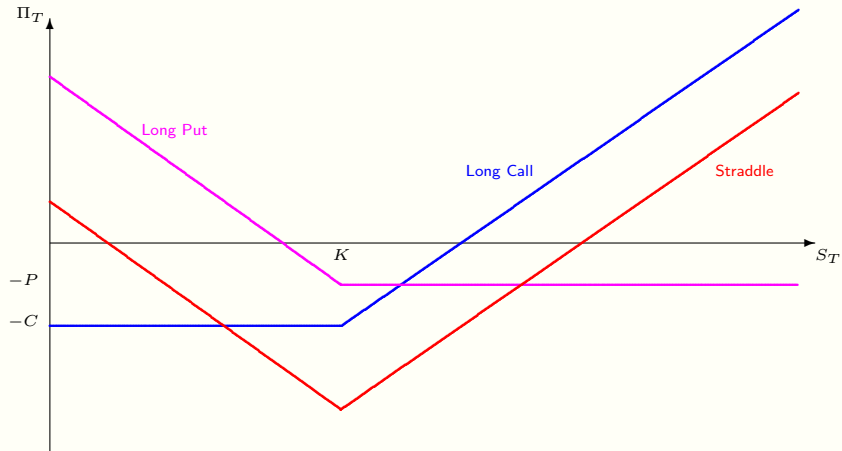
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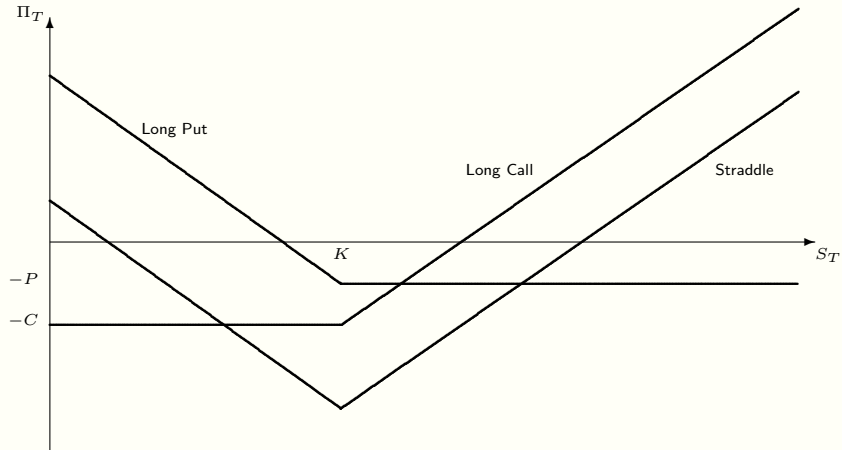
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Investing at times of high volatility

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- This investment strategy might be used by investors if they believe that the volatility of the asset will be high.
- ▶
 - In time of high volatility (the standard deviation of asset returns) prices tend to move widely from their current value.
 - This makes it likely that at maturity of the options the prices are far away from its current value, although this cannot be guaranteed as price movements might cancel each other out. However, large movements are quite likely.
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Investing at times of high volatility

- ▶ If volatility is **high**, prices are moving more widely

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- ▶ If volatility is high, prices are moving more widely and at maturity are more likely to have **moved further away** from the current value

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Investing at times of high volatility

- ▶ If volatility is high, prices are moving more widely and at maturity are more likely to have moved further away from the current value
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- ▶ Investors seeking to exploit times of high volatility could use a straddle if they do not have information on the **direction of price movements**

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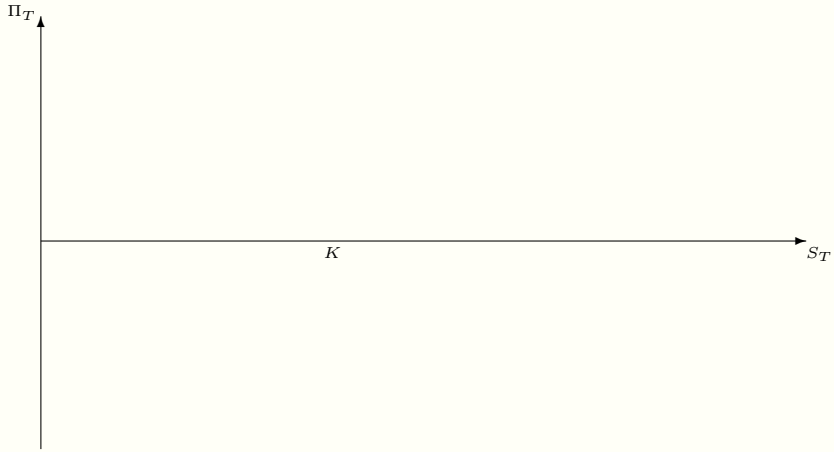
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 - ▶ Both options use the same strike price.
 - ▶ The investor sells a call option
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 - ▶ The resulting payoff profile is known as a straddle.
- The less the price at maturity deviates from the strike price, the higher the profits of the investor; if the price moves far away from the strike price, the investor would suffer a loss. The profits are generated from the option premia and the losses emerge from the sold options being exercised. It has to be noted that in contrast to the other options strategies discussed, losses to the investors here can be substantial.

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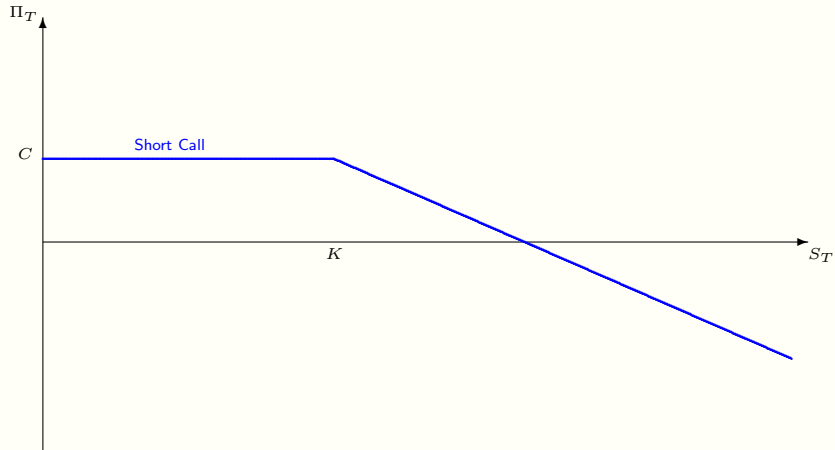
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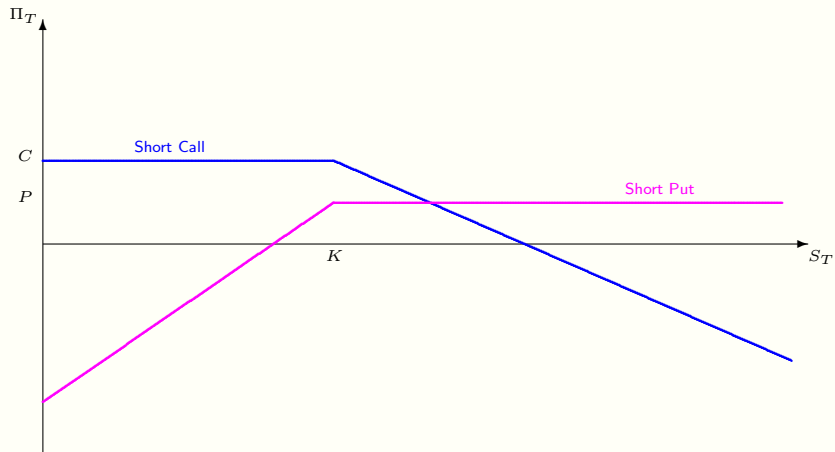
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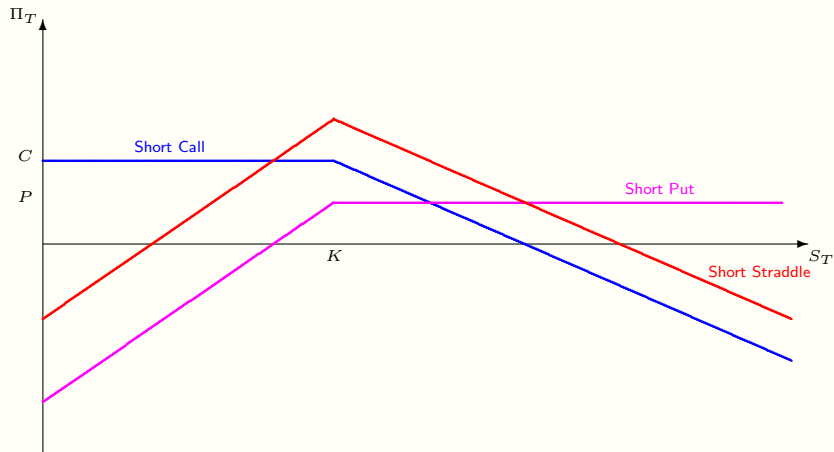
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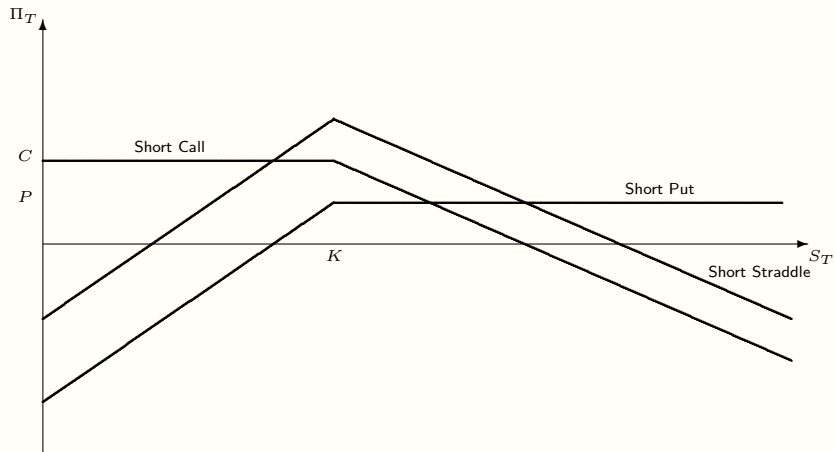
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Investing at times of low volatility

- This investment strategy might be used by investors if they believe that the volatility of the asset will be low.
 - ▶
 - In times of low volatility, returns are low and hence prices are moving less.
 - At maturity the price is therefore most likely to be close to the current value.
 - ▶ Often the strike price will be the current asset value, implying that the investor believes that asset prices will not move considerably.
 - ▶ If investors know which direction an asset will be moving, other investment strategies could be used, even for small movements, such as a bull or bear spread, but if they are uncertain about the direction of any movement, a short straddle might be the best choice.
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Benefits of using option strategies

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- We can now summarise the main benefits of using option strategies.
- ▶ We have only considered a small number of option strategies here, more complex strategies exist, some involving more than two options; these option strategies allow a more refined approach to allow investors to profit from any information they may hold about the asset they invest in.
- ▶ Often, option strategies do not have a unique combination of options to achieve a certain payoff, but different combinations can be used.
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 - In many cases option strategies are used to limit any potential losses of the price movement of the asset is not as expected by the investor.
 - The consequence is often that the required combination of options to achieve the limits on losses will also limit the profits of investors.
- ▶ Another advantage of using options is that option premia are mostly a small fraction of the value of the underlying asset. This allows investors buying options to obtain a large exposure to risks, with the prospects to large profits, but also large losses.
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