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

- We can combine options and generate different payoff profiles at maturity of the option
- We combine put and call options, long and short options, and options with different strike prices
- Such payoff profiles might suit the needs of specific investors

Combining options

→ 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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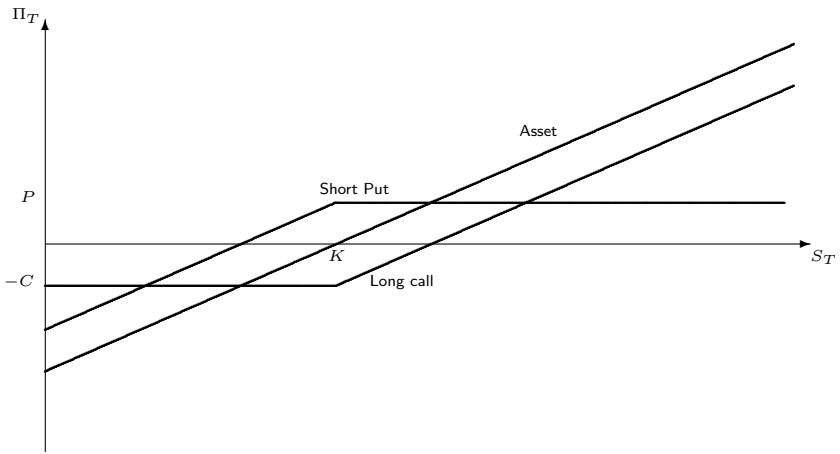
  - We may combine put and call options to achieve these payoff profiles,
  - but also long and short positions in options, where short position is to sell an option.
  - We might also use options with the same or with different strike prices.
- These payoff profiles are developed to suit the needs of the investor and their investment strategy.

→ We will now explore some of the most common of such investment strategies.

Synthetic asset



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.

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
- Assets might not be available due to regulatory constraints, such as capital controls or limited access to assets seen as of national importance
- Investors might not want to obtain the asset directly, for example to avoid disclosing significant share holdings
- Using options can circumvent these restrictions, but in case of stocks without obtaining voting rights

Reason to re-create the underlying asset

→ It might seem odd that an investor would use options to recreate a payoff profile of an asset that is readily available for purchase; we will look at reasons why an investor might follow this strategy.

- 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.

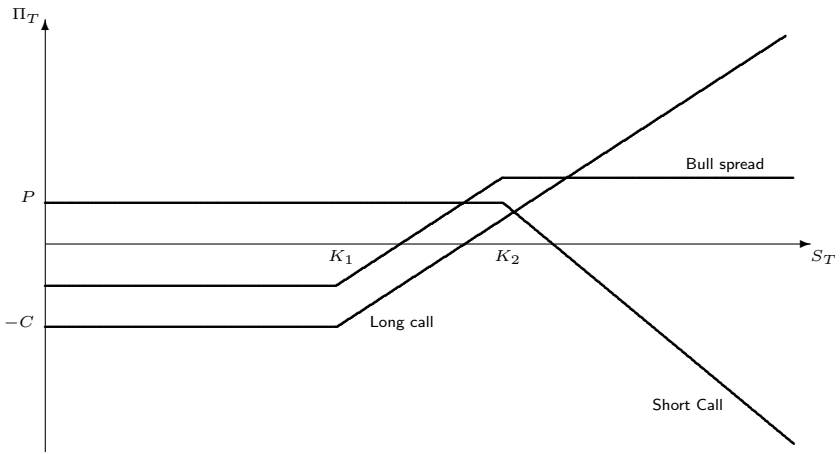
- An investor might not be able to invest into an asset direct due to regulatory constraints imposed.
- There might be capital controls that prevent the investment into a country overall, prevent the withdrawal of investments, or limit investments. Using options might be a way around such regulations.
- Many countries also have restrictions on investment into companies of national importance, be that in defense, infrastructure, or media.

- In other cases, investors might deliberately avoid investing into the asset directly.
- This might be because of rules that require the disclosure of positions above a certain threshold and investors might prefer to not make such disclosures as not to disclose information on their investment strategy and affect prices adversely for further purchases. In other instances, reaching certain thresholds when holding asset may also trigger the requirement to make an offer to purchase all outstanding shares and an investor may not want to do so.

- Using options, if there are no constraints on investment in these or they are listed at a different exchange with different rules, can allow investors to avoid any restrictions.
- 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.

Bull spread



Bull spread

→ We can now look at other investment strategies that seek to exploit the opinions investors have on the future development of asset prices. These options strategies all have been given names.

- We look at the profits the trading strategy generates at maturity of the options for different values of the underlying asset.
- We choose options with two different strike prices, a lower and a higher strike price.
- The investor buys a call option with the low strike price
- and sells a call options with the high strike price.
- The resulting payoff profile is known as a bull spread.

→ The investor has limited his profits if the underlying asset increases in value, but also limited the losses if the asset value falls below the low strike price.

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, but also limits potential profits

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.
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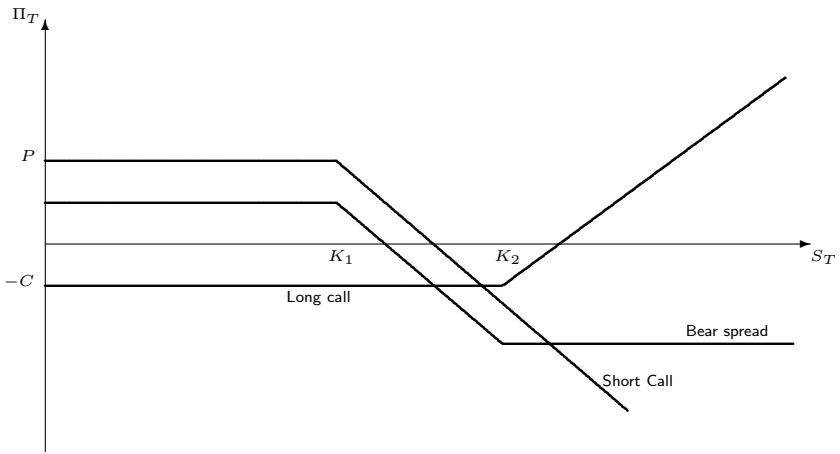
  - Selling the other call limits the losses from buying the call due to the additional revenue this brings.
  - The effect it that this strategy will also limit possible gains.

→ 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.

Bear spread



Bear spread

→ We can now look at a similar strategy to the bull spread, but here the expectation of the investor is that the asset value will fall.

- We look at the profits the trading strategy generates at maturity of the options for different values of the underlying asset.
- We choose options with two different strike prices, a lower and a higher strike price.
- The investor buys a call option with the high strike price
- and sells a call options with the low strike price.
- The resulting payoff profile is known as a bear spread.

→ The investor has limited his profits if the underlying asset decreases in value, but also limited the losses if the asset value rises above the upper strike price.

Limiting profits to reduce losses

- A bear spread is similar to a bull spread, only the profits are generated if the asset value falls
- Investors limit their profits from selling a call option by buying another call
- This limits the losses from the premium of the long call option in the case the asset value increases

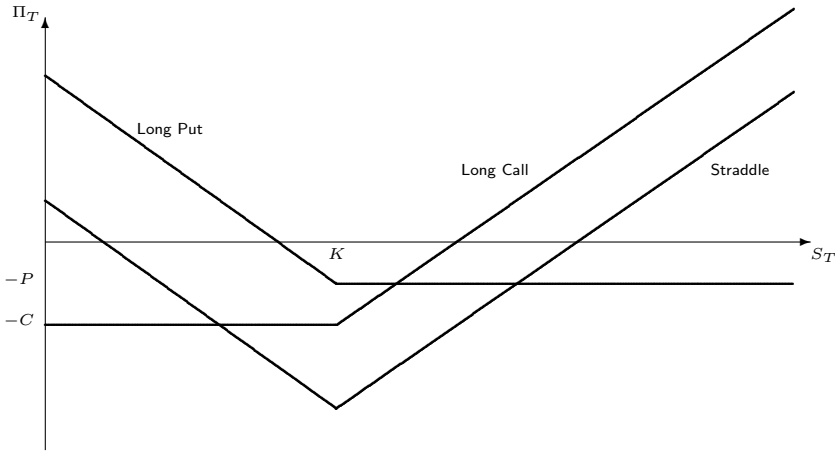
Limiting profits to reduce losses

→ The bear spread limits losses, also limits the profits that can be made.

- Looking at the payoff profile of a bear spread, it is very similar to a bull spread,
  - only the areas of profits and losses are reversed; now the investor obtains profits if the asset value falls.
- Buying a call counteracts any losses the investor makes from selling another call.
- The premium obtained from selling the call option allows investors to make profits of the asset falls in value.

→ Such a strategy might be sought if the investor believes the asset value to decrease, but does not expect a larger decrease 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 rising as having a non-significant probability.

Straddle



Straddle

→ A quite different investment strategy is a straddle. Here the investor generates profits of the asset value changes sufficiently, whether it increases or decreases.

- We look at the profits the trading strategy generates at maturity of the options for different values of the underlying asset.
- Both options use the same strike price.
- The investor buys a call option
- and buys a put option at the same strike price.
- The resulting payoff profile is knows 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.

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
- If the strike price of the options chosen is the current asset value, investors make profits if asset prices move much
- Investors seeking to exploit times of high volatility could use a straddle if they do not have information on the direction of price movements

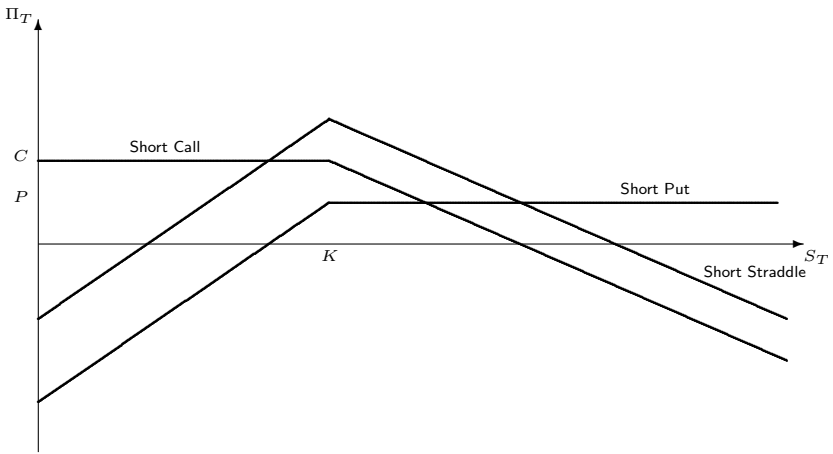
Investing at times of high volatility

→ 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.
- Often the strike price will be the current asset value, implying that the investor believes that asset prices will move considerably.
- If investors know which direction an asset will be moving, other investment strategies could be used, but if they are uncertain about the direction of any movement, a straddle might be the best choice.

→ Investors can use a straddle to exploit the large price movements in time of high volatility. We note however, that high volatility also implies high option premia and the movements need to be substantial to recover the costs of the options.

Short Straddle



Short Straddle

→ A short straddle is the inverse of a straddle; the investor would make profits if the asset value does not change a lot, but incurs losses if it does.

- We look at the profits the trading strategy generates at maturity of the options for different values of the underlying asset.
- Both options use the same strike price.
- The investor sells a call option
- and sells a put option at the same strike price.
- The resulting payoff profile is knows 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 afar 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 trategies discussed, losses to the investors here can be substantial.

Investing at times of low volatility

- If volatility is low, prices are moving less widely and at maturity are more likely to have stayed close to their current value
- If the strike price of the options chosen is the current asset value, investors make profits if stock prices do not move much
- Investors seeking to exploit times of low volatility could use a short straddle if they do not have information on the direction of price movement

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.

→ Investors can use a short straddle to exploit the small price movements in time of low volatility. We note however, that low volatility also implies low option premia and the movements need to be very small to not outweigh the premia obtained.

Benefits of using option strategies

- Many more option strategies exist and can be exploited, some involving three or more options
- Many option strategies can also be achieved with different combinations of options
- Options strategies are often used to limit losses if price movements are adverse, but they often also limit profits
- As option premia are low compared to the underlying asset, considerable leverage can be achieved using option strategies

Benefits of using option strategies

→ 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.

→ Thus we can use options to create a payoff profile that is allows investors to make profits in scenarios they believe to be likely, while limiting losses if they do not occur.

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Andreas Krause
Department of Economics
University of Bath
Claverton Down
Bath BA2 7AY
United Kingdom

E-mail: mnsak@bath.ac.uk