PRINCIPLES OF FINANCE

OPTION STRATEGIES

Elise Gourier

(elise.gourier@essec.edu)

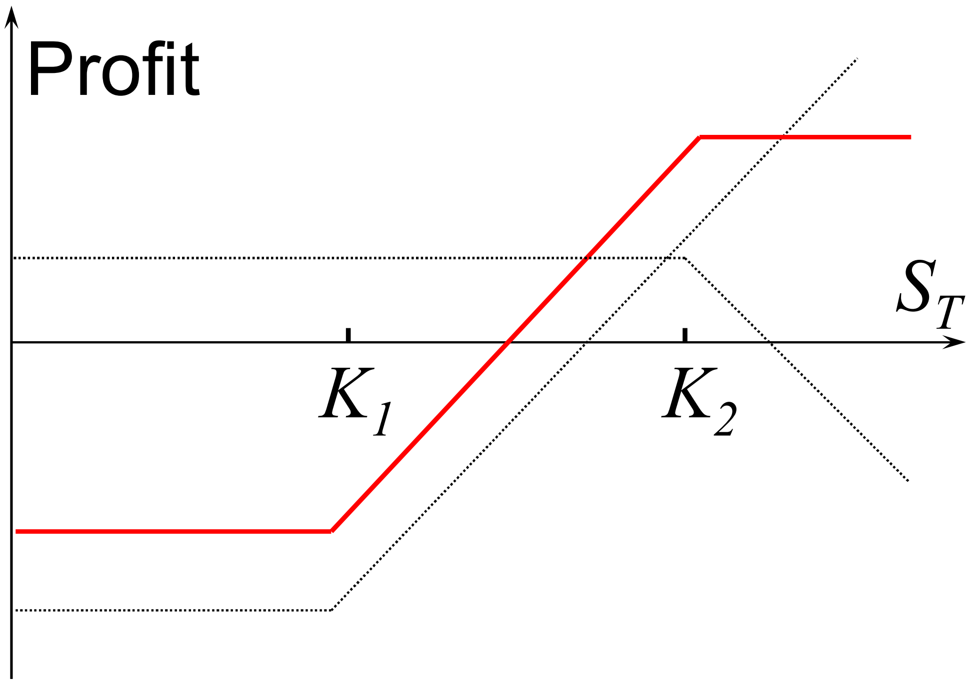
Option strategies

Options can be combined with other securities (including different options) to generate different payoff profiles. Examples include:

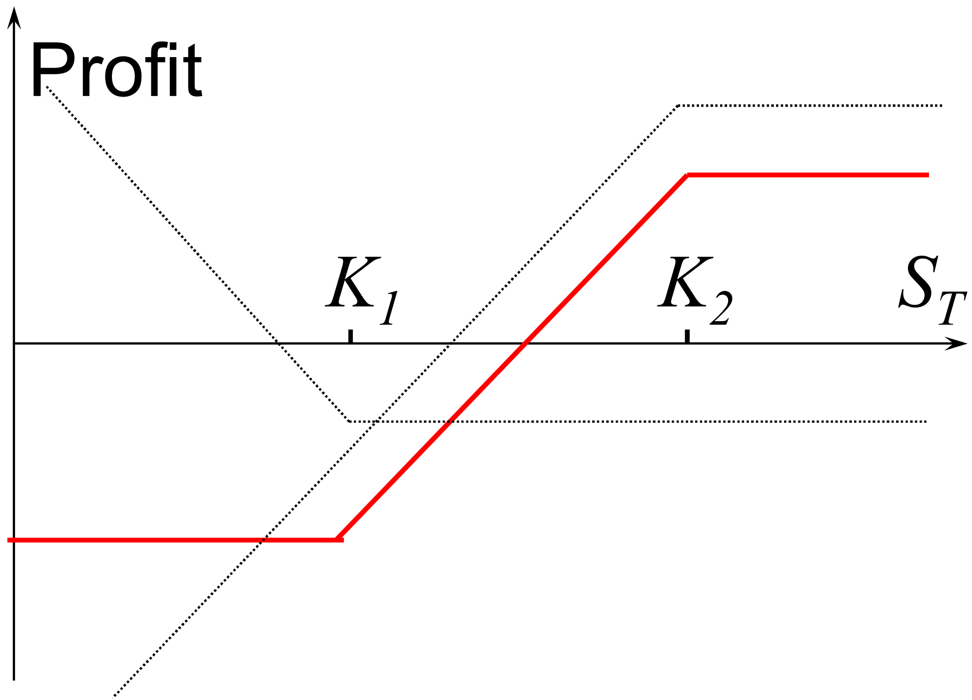
- **Vertical spread:** A strategy in which you buy one call (put) option with one strike and sell another call (put) option with a different strike (the same maturity).
  - **Bull spread:** the option purchased has a lower strike than the option sold.
  - **Bear spread**: the option purchased has a higher strike than the option sold

Option strategies

Example of bull spread using calls

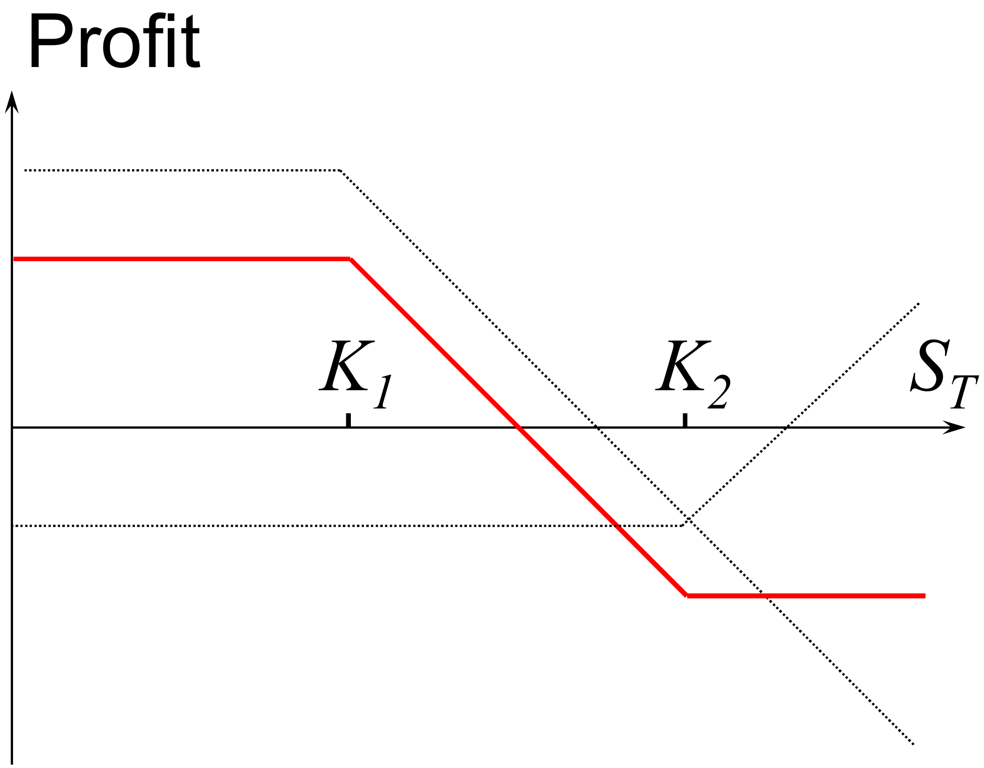


Example of bull spread using puts

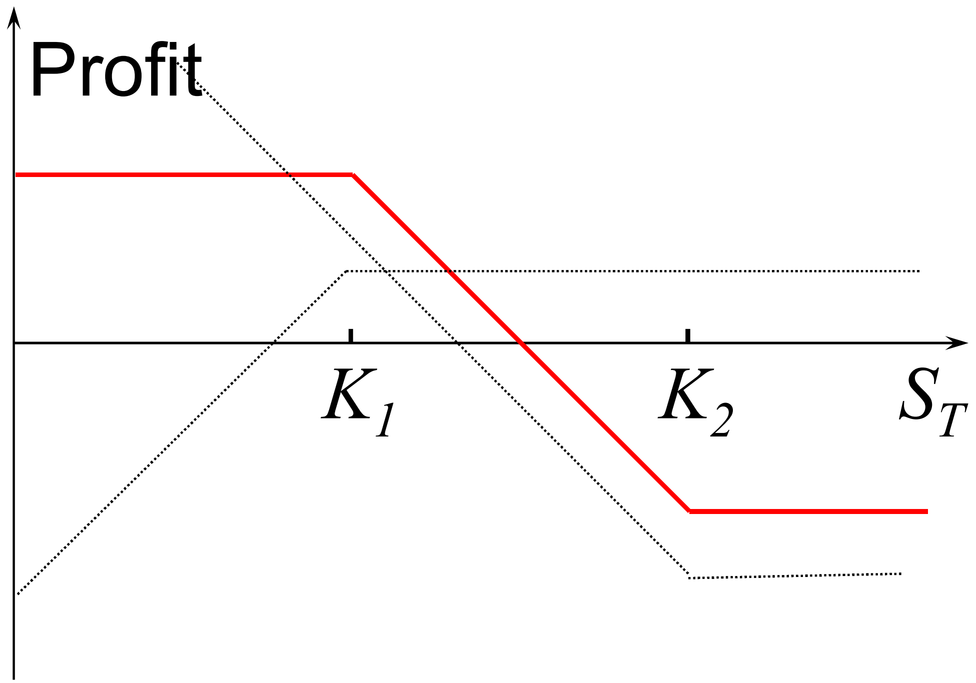


Option strategies

Example of bear spread using calls



Example of bear spread using puts



Option strategies

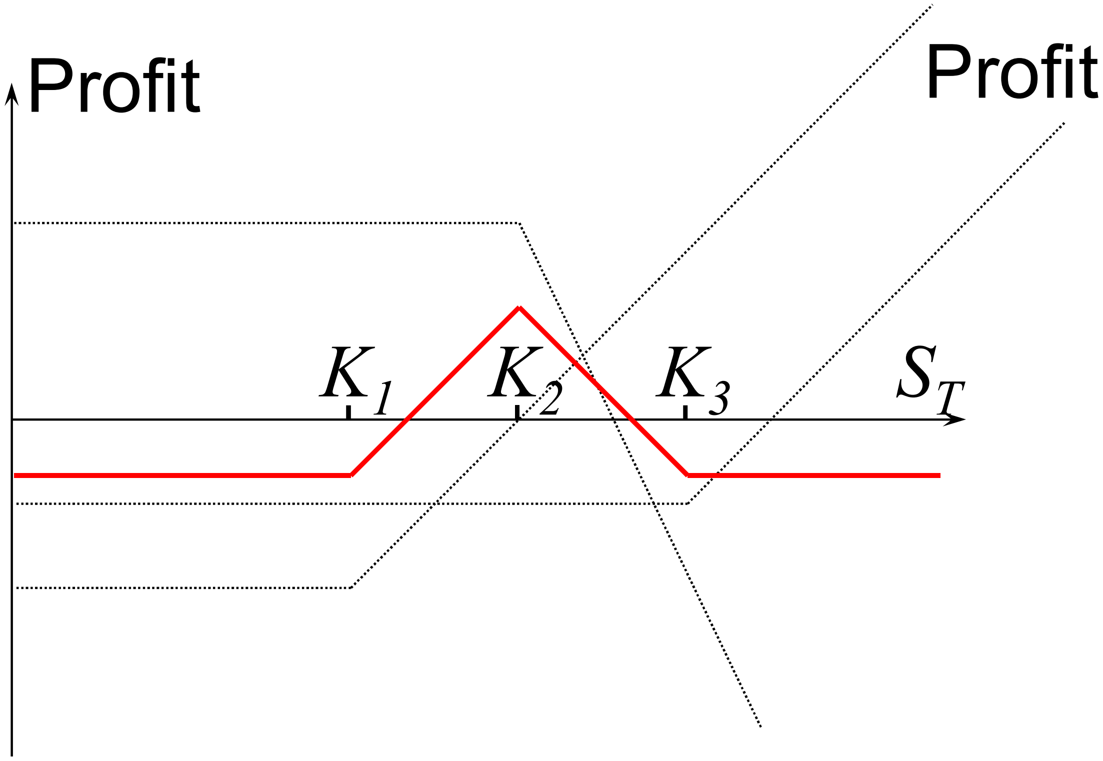
- **Butterfly spread:** A strategy which involves three options of the same kind (either call or puts) with different strikes and same maturity.

  - **Butterfly using calls:** buy a call with a low strike K_1, buy a call with a high strike K_3, and sell two calls with strike between K_1 and K_3.

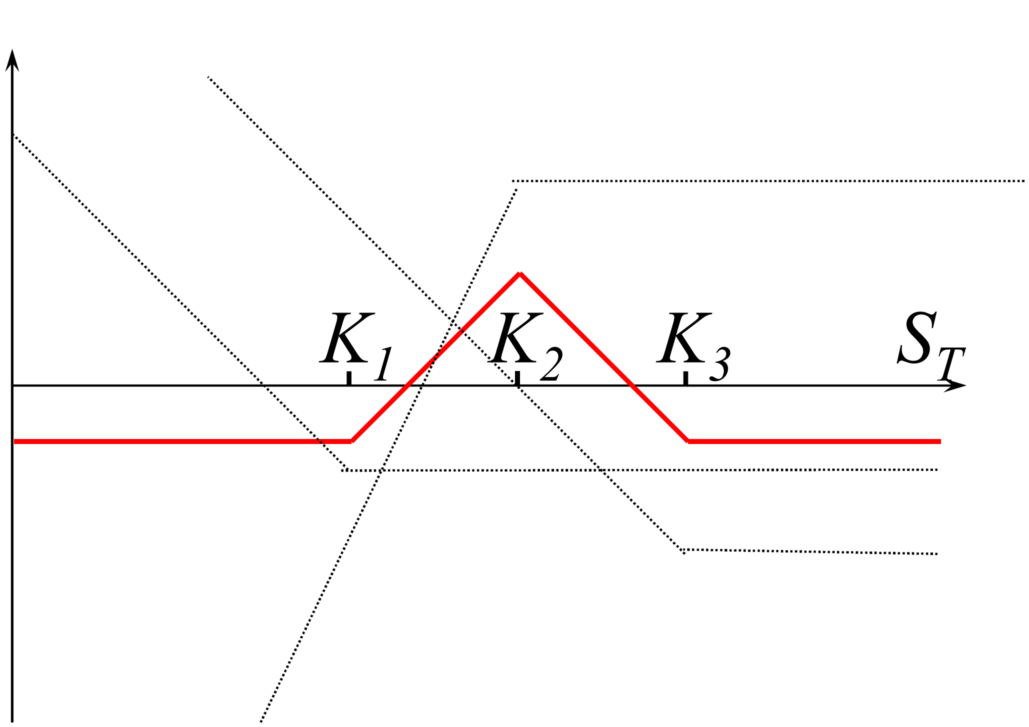
  - **Butterfly using puts**: buy a put with a low strike K_1, buy a put with a high strike price K_3, and sell two puts with strike between K_1 and K_3.

Option strategies

Example of butterfly spread using calls

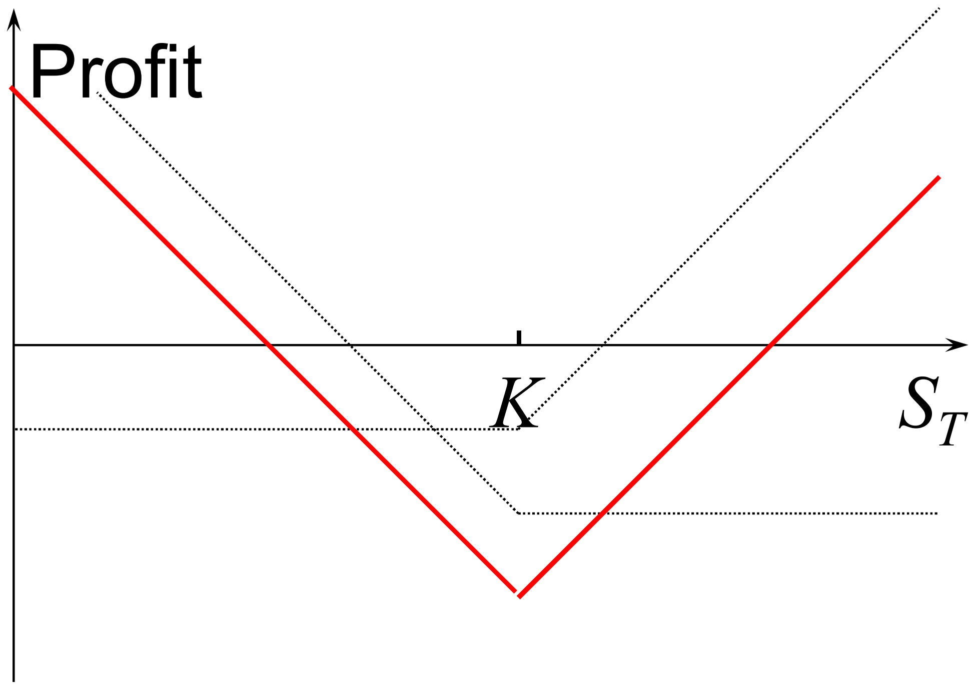


Example of butterfly spread using puts



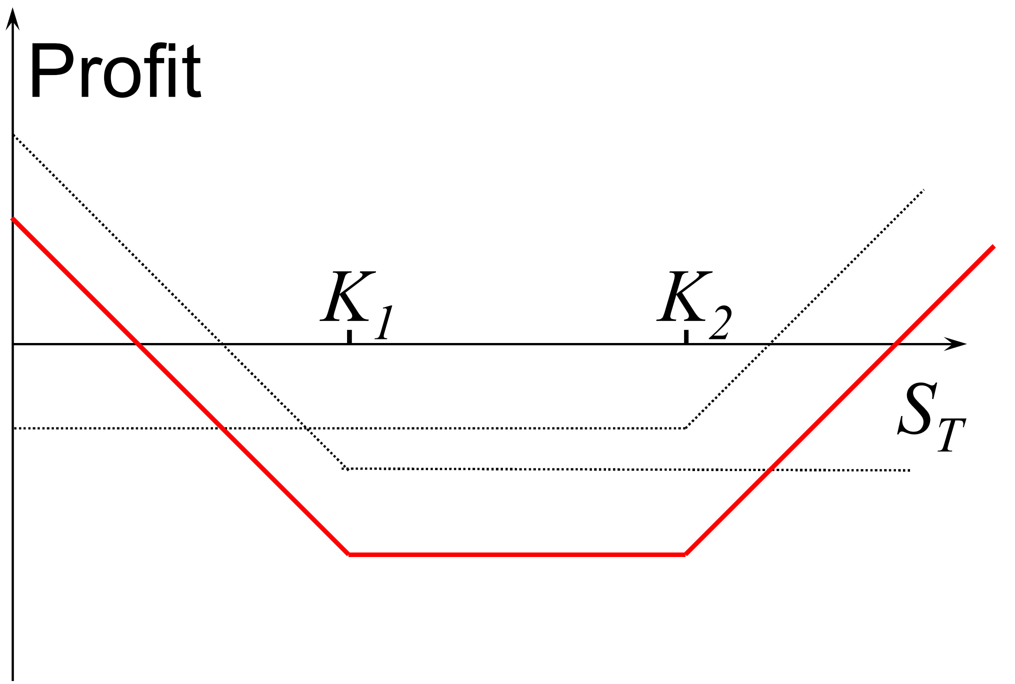
Option strategies

- **Straddle:** Combines a call and a put with the same strikes and maturity.



Option strategies

- **Strangle:** Combines a call and a put with <u>different</u> strikes and same maturity.

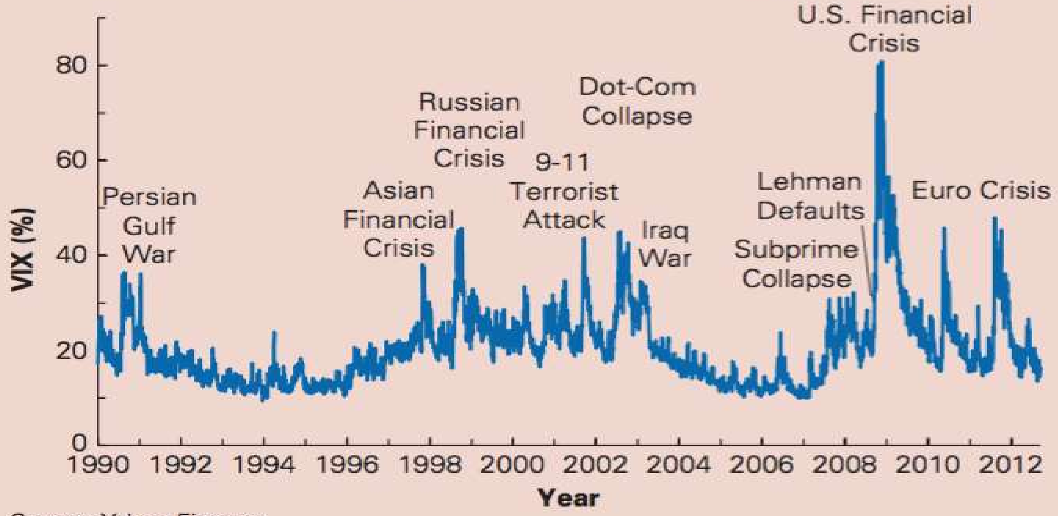


The VIX index

GLOBAL FINANCIAL CRISIS The VIX Index

The use of the Black-Scholes option pricing formula to compute implied volatility has become so ubiquitous that in January 1990 the Chicago Board Options Exchange introduced the **VIX Index**, which tracks the one-month implied volatility of options written on the S&P 500 index. Quoted in percent per annum, this index has since become one of the most-cited measures of market volatility. Because it characterizes the level of investor uncertainty, it is often referred to as the "fear index."

As the figure below shows, while the average level of the VIX is about 20%, the index does indeed rise during times of crisis and heightened uncertainty. This effect is illustrated most dramatically during the U.S. financial crisis, with the VIX nearly quadrupling between September and October 2008, to a level almost twice its previous all-time high. The index remained at these historically high levels for several months, reflecting the unprecedented uncertainty that accompanied the financial crisis. As this uncertainty dissipated in mid-2009, the index began to drop, reflecting renewed investor confidence. Since then, however, uncertainty in Europe has driven time periods when the VIX has again topped 40%.



Source: Yahoo Finance