

FE620 Pricing and Hedging

Lecture 7: Trading Strategies Involving Options

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Strategies to be Considered

- ▶ Bond plus option to create principal protected note
- ▶ Stock plus option
- ▶ Two or more options of the same type (a spread)
- ▶ Two or more options of different types (a combination)

Principal Protected Note

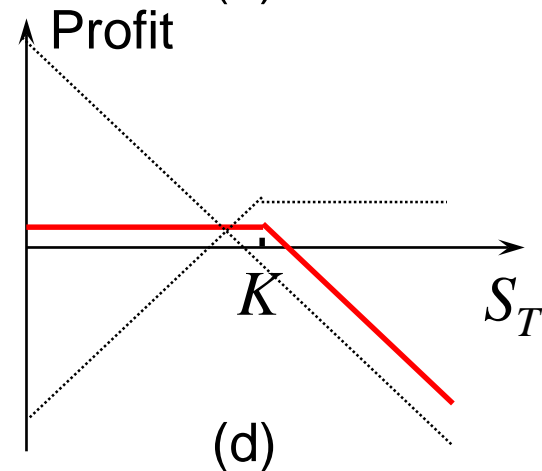
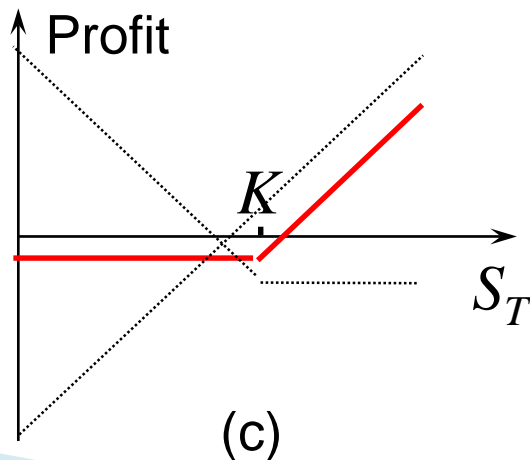
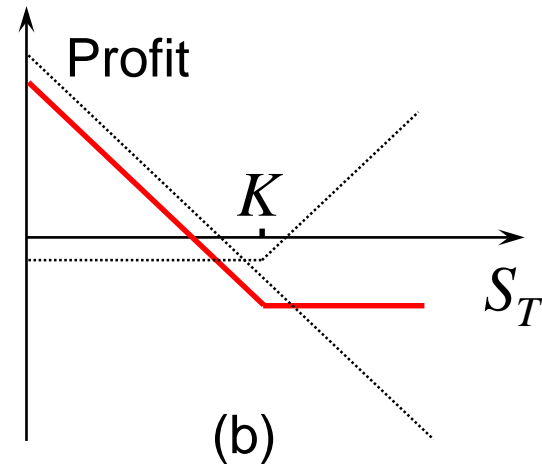
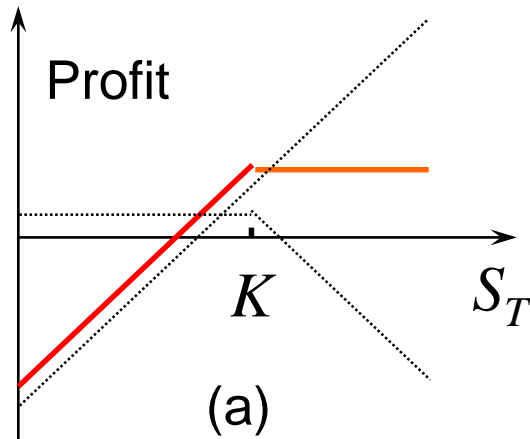
- ▶ Allows investor to take a risky position without risking any principal
- ▶ Example: \$1000 instrument consisting of
 - 3-year zero-coupon bond with principal of \$1000
 - 3-year at-the-money call option on a stock portfolio currently worth \$1000

Principal Protected Notes continued

- ▶ Viability depends on
 - Level of dividends
 - Level of interest rates
 - Volatility of the portfolio
- ▶ Variations on standard product
 - Out of the money strike price
 - Caps on investor return
 - Knock outs, averaging features, etc

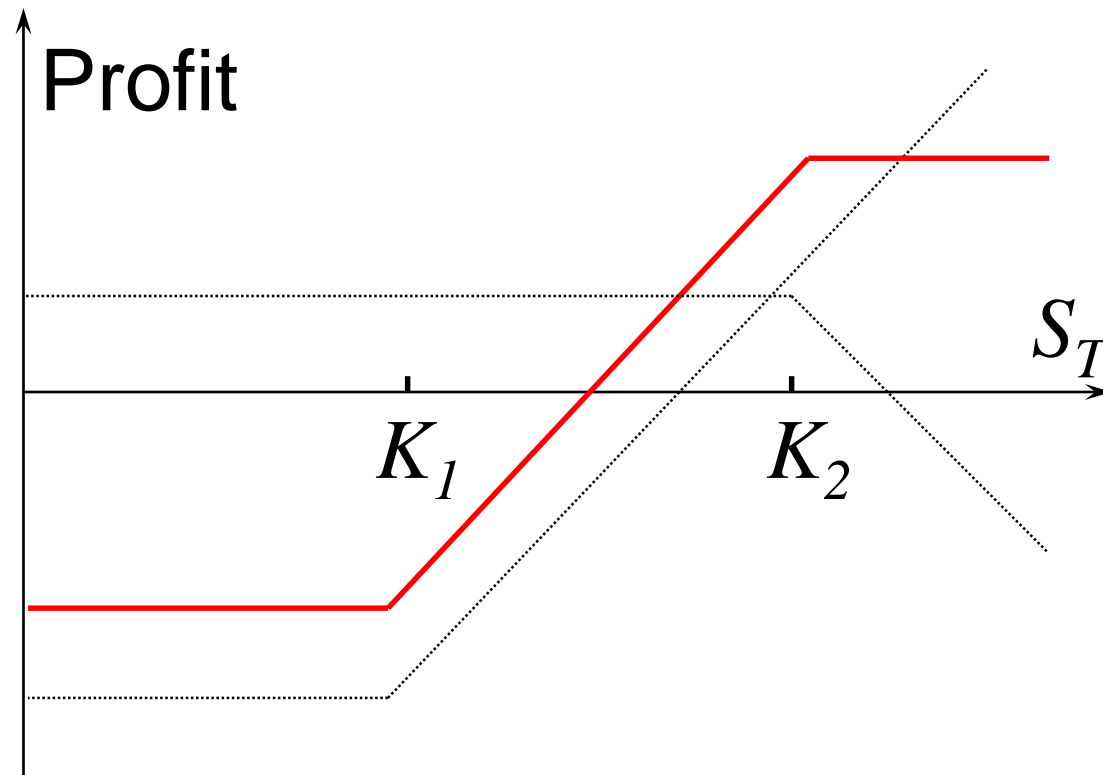
Positions in an Option & the Underlying

(Figure 12.1, page 255)



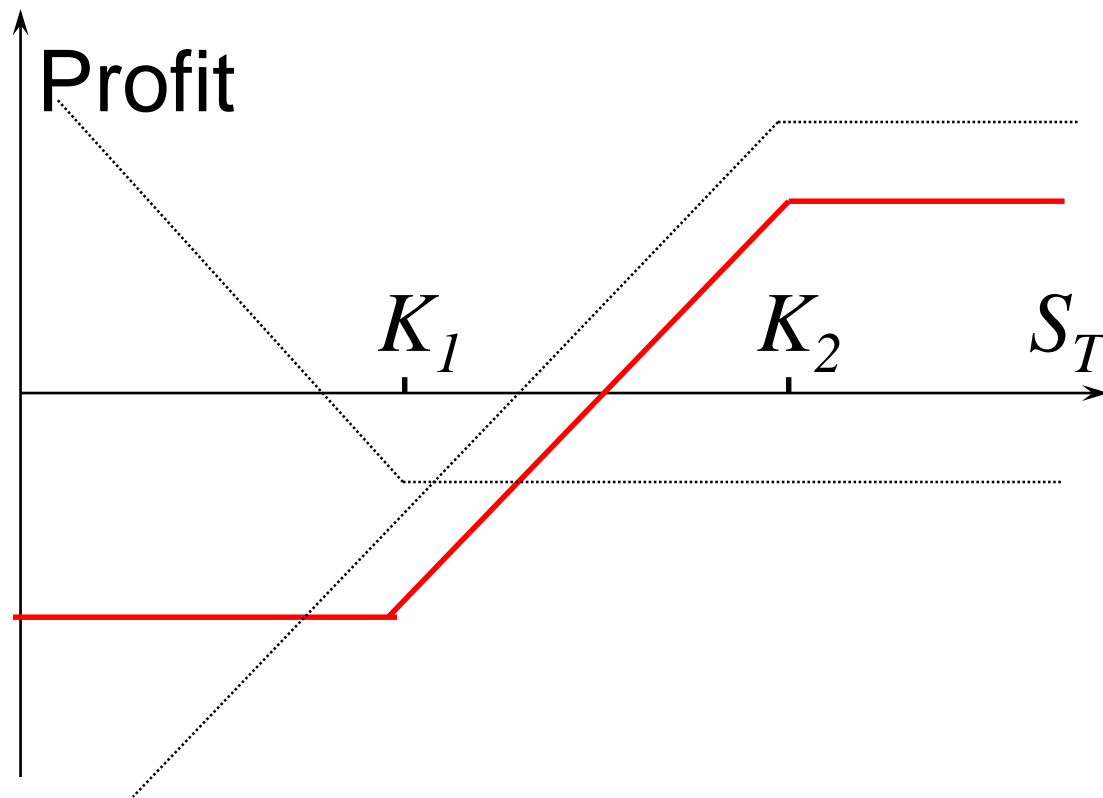
Bull Spread Using Calls

(Figure 12.2, page 256)



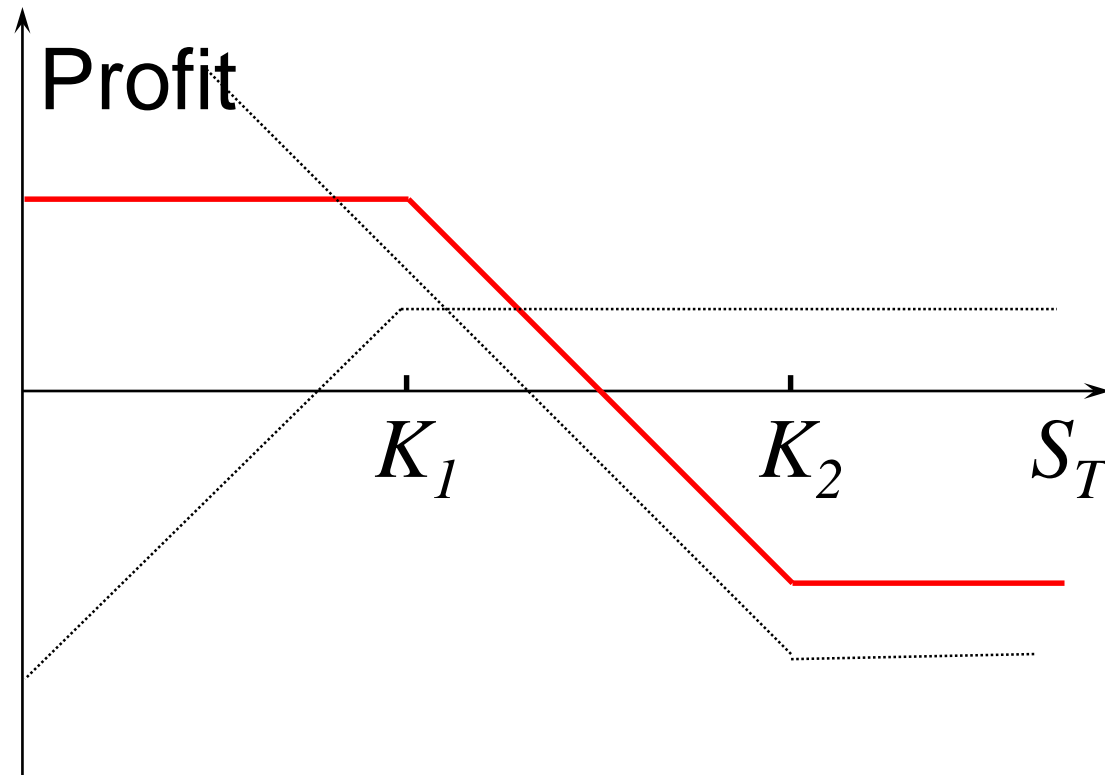
Bull Spread Using Puts

Figure 12.3, page 258



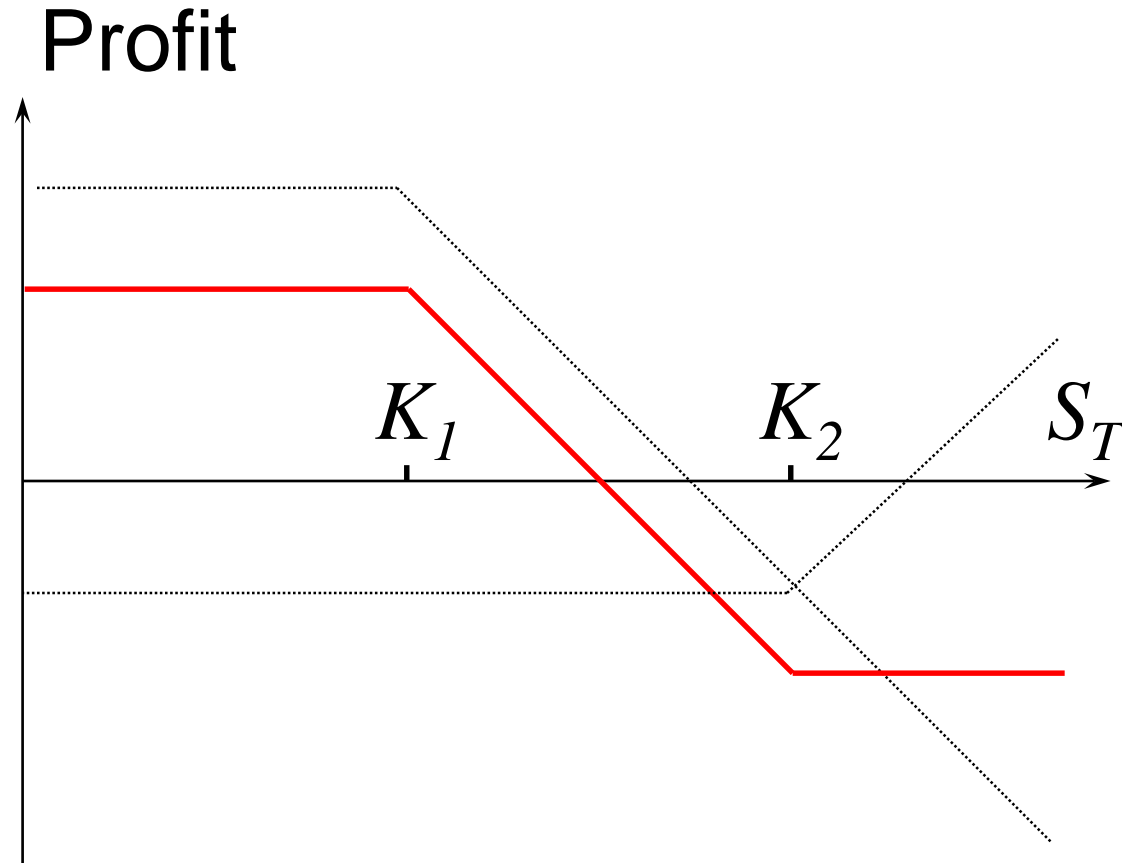
Bear Spread Using Puts

Figure 12.4, page 258



Bear Spread Using Calls

Figure 12.5, page 259

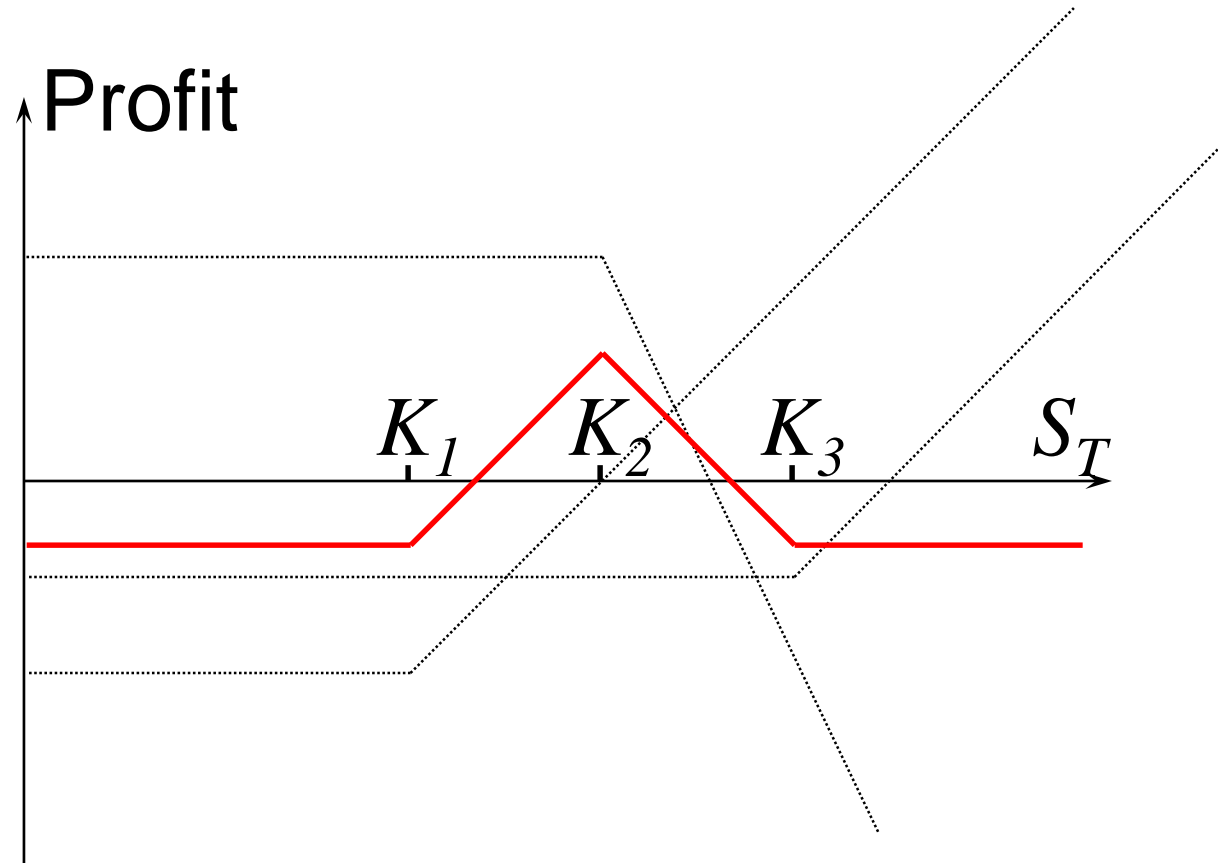


Box Spread

- ▶ A combination of a bull call spread and a bear put spread
- ▶ If all options are European a box spread is worth the present value of the difference between the strike prices
- ▶ If they are American this is not necessarily so (see Business Snapshot 11.1)

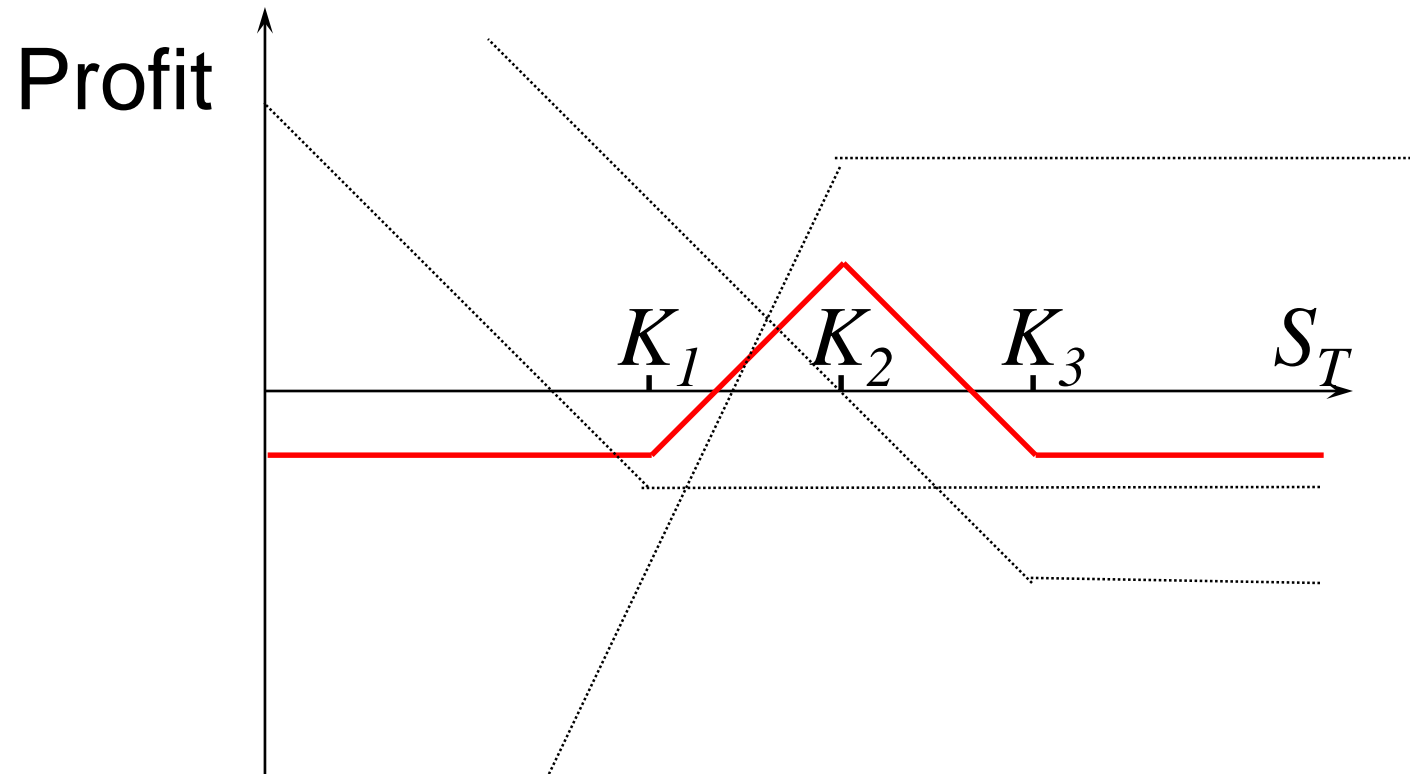
Butterfly Spread Using Calls

Figure 12.6, page 260



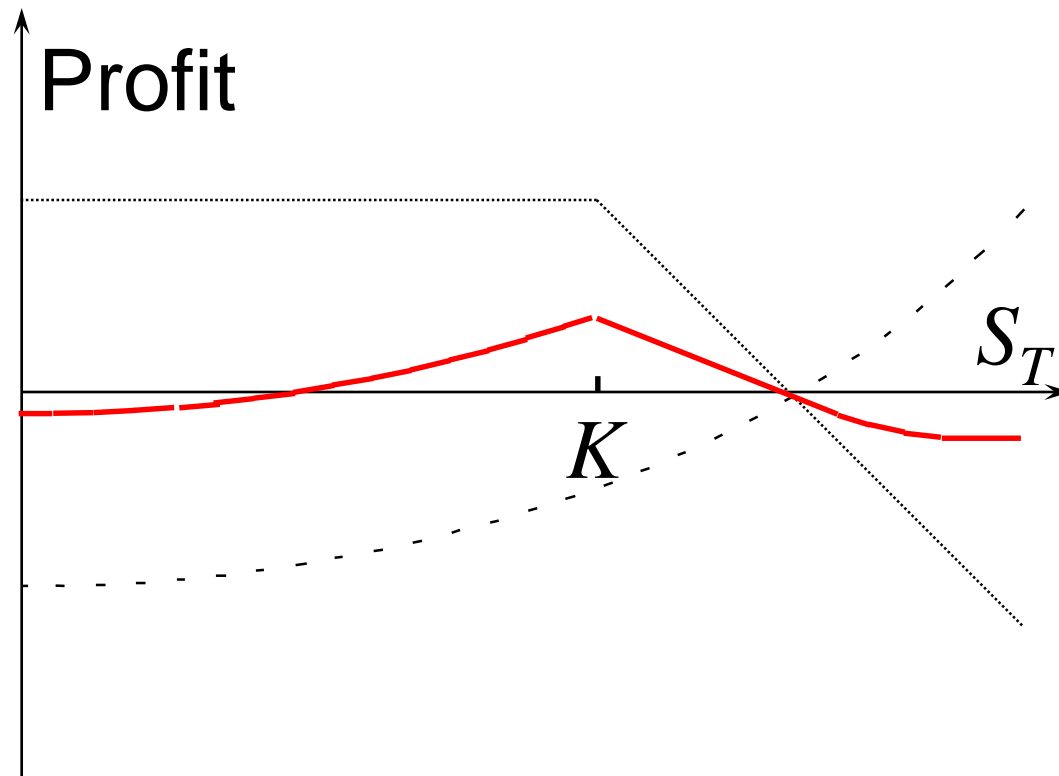
Butterfly Spread Using Puts

Figure 12.7, page 262



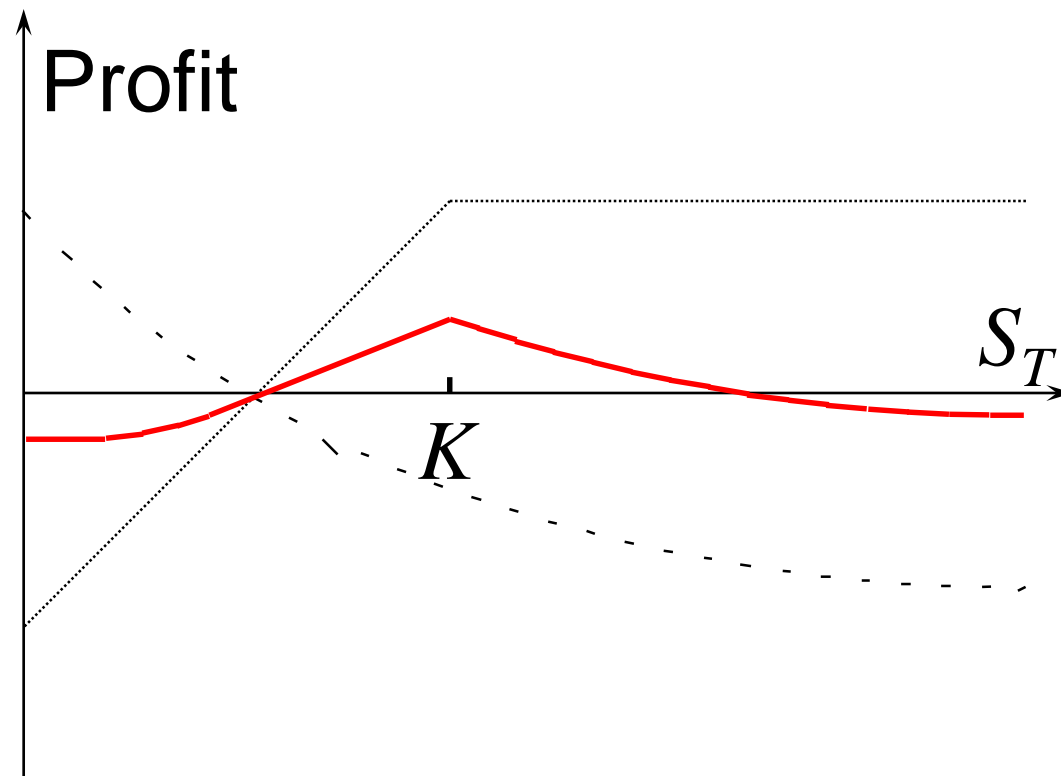
Calendar Spread Using Calls

Figure 12.8, page 263



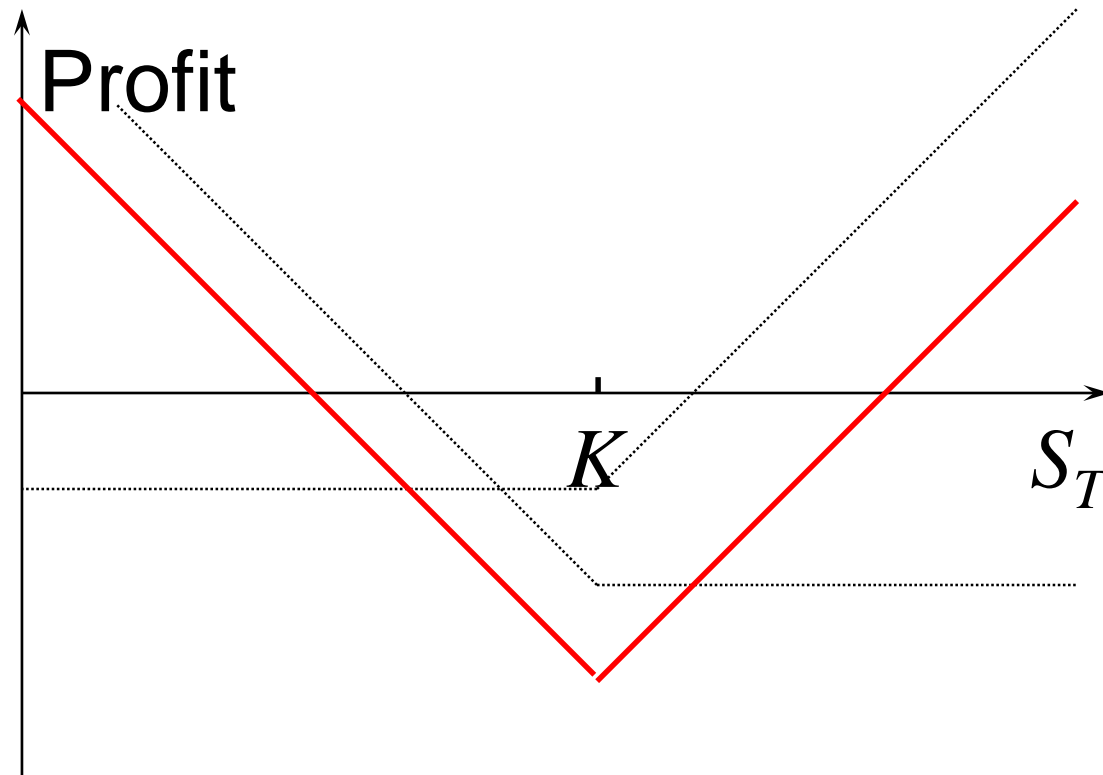
Calendar Spread Using Puts

Figure 12.9, page 264



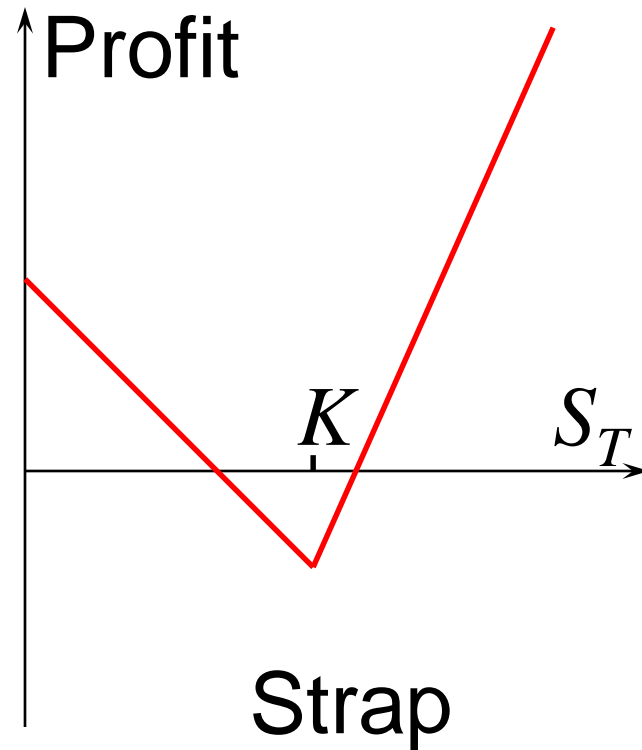
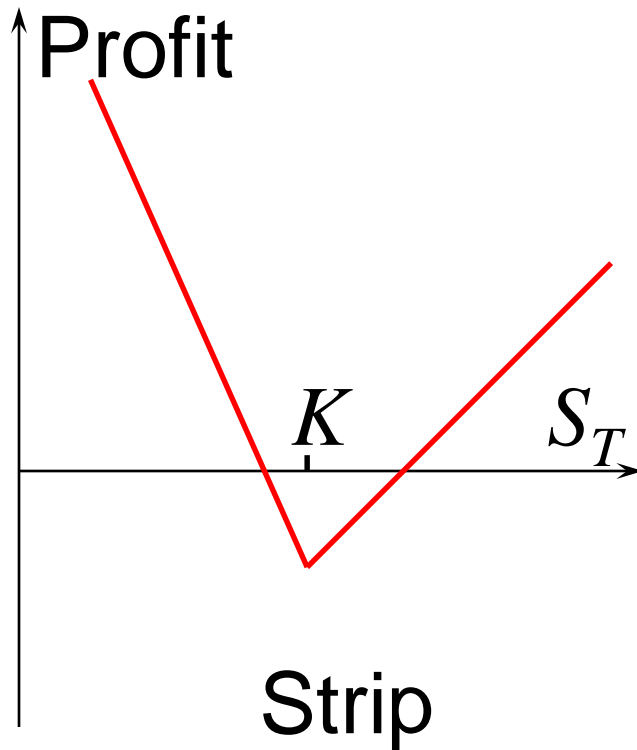
A Straddle Combination

Figure 12.10, page 265



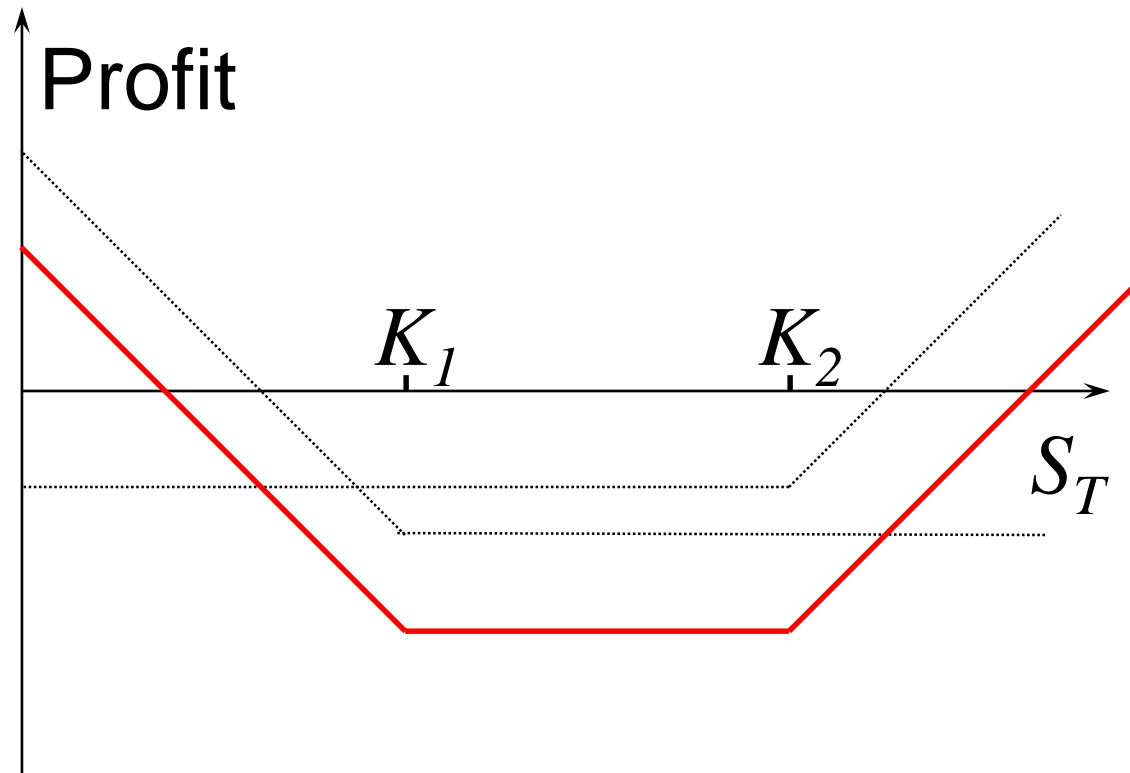
Strip & Strap

Figure 12.11, page 266



A Strangle Combination

Figure 12.12, page 267



Other Payoff Patterns

- ▶ When the strike prices are close together a butterfly spread provides a payoff consisting of a small “spike”
- ▶ If options with all strike prices were available any payoff pattern could (at least approximately) be created by combining the spikes obtained from different butterfly spreads