What?

Bear put calendar spread includes two option positions:

- Long put with longer maturity
- Short put with shorter maturity
- Both long put and short put have the same strike price

The purpose is to speculate with put options when we are bearish. This is achieved with the long put with longer maturity. This will be expensive due to longer maturity. However, short put with shorter maturity will make this spread cheaper. It is possible to have new short maturity short puts against the long maturity long puts as short puts expire. Bear put calendar spread is a speculative debit position.

Option pricing model

Calendar spread examples require the use of Black, Scholes and Merton option pricing models and corresponding option pricing calculator. These two publications are as follows:

Black, Fischer, and Myron Scholes. "The pricing of options and corporate liabilities." Journal of political economy 81.3 (1973): 637-654.

Merton, Robert C. "Theory of rational option pricing." The Bell Journal of economics and management science (1973): 141-183.

Many different option pricing calculators are available online with no particular superiority from one another.

Example

Currently, AAPL is trading at $200. We have a bearish expectation on AAPL. Risk-free rate is 1%. Expected volatility is 50%.

Bear put calendar spread will include:

- Long put, strike price of $200, **maturity of 2 weeks**, pay $7.77 per share
- Short put, strike price of $200, **maturity of 1 week**, collect $5.50 per share

Our initial cash flow:

- Long put ⇒ -$7.77 × 100 shares = -$777
- Short put ⇒ $5.50 × 100 shares = $550
- Net cash flow = -$777 + $550 = **-$227**

Possible outcomes at the end of one week:
Please note that because the primary purpose of a calendar spread is to take advantage of option premiums our example will calculate the expected option price using an online option price calculator.

Price scenarios are at the end of the first week.

- AAPL stock price increases to $220
  - Long put: We can sell our long put option at $0.56 (calculated using an online option price calculator). $0.56 per share × 100 shares = $56 profit
  - Short put value: Some trader, who bought our put option, has a right to sell AAPL to us at $200 a share. Spot price is $220. $0 loss/profit.
  - We paid: $227
  - **Overall outcome** ⇒ Long put ($56 profit) and Short put ($0 loss/profit) and initial payment ($227) = **$171 loss**.
- AAPL stock price increases to $210
  - Long put: We can sell our long put option at $2.00 (calculated using an online option price calculator). $2.00 per share × 100 shares = $200 profit
  - Short put value: Some trader, who bought our put option, has a right to sell AAPL to us at $200 a share. Spot price is $210. $0 loss/profit.
  - We paid: $227
  - **Overall outcome** ⇒ Long put ($200 profit) and Short put ($0 loss/profit) and initial payment ($227) = **$27 loss**.
- AAPL stock price stays the same at $200
  - Long put: We can sell our long put option at $5.50 (calculated using an online option price calculator). $5.50 per share × 100 shares = $550 profit
  - Short put value: Some trader, who bought our put option, has a right to sell AAPL to us at $200 a share. Spot price is $200. $0 loss/profit.
  - We paid: $227
  - **Overall outcome** ⇒ Long put ($550 profit) and Short put ($0 loss/profit) and initial payment ($227) = **$323 profit**.
- AAPL stock price decreases to $190

- Long put: We can sell our long put option at $11.77 (calculated using an online option price calculator). $11.77 per share × 100 shares = $1,177 profit
- Short put value: Some trader, who bought our put option, has a right to sell AAPL to us at $200 a share. We buy 100 AAPL shares at $200. Outcome = $190 - $200 = -$10 per share × 100 shares = $1,000 loss.
- We paid: $227
- **Overall outcome** ⇒ Long put ($1,177 profit) and Short put ($1,000 loss) and initial payment ($231) = **$54 loss**.

Comment

Notice how any scenario that has a price change results in a loss. The only scenario that has some profit is the one with no price change. But, this is a **Bear put calendar spread**. How is this possible?

Keep in mind that the price scenarios are at the end of the first week. The idea behind the short put option with the shorter maturity is to make the initial long put option with the longer maturity cheaper. So, as long as the spot price stays above $200, we still own a long put option with one week of maturity left.

What could make the calendar spread more interesting perhaps is to consider different strike prices for the long and the short put options.