

Financial Mathematics

MATH 5870/6870¹
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Le Chen

lzc0090@auburn.edu

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Auburn University
Auburn AL

¹Based on Robert L. McDonald's *Derivatives Markets*, 3rd Ed, Pearson, 2013.

Chapter 3. Insurance, Collars, and Other Strategies

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§ 3.1 Basic insurance strategies

§ 3.2 Put-call parity

§ 3.3 Spreads and collars

§ 3.4 Speculating on volatility

§ 3.5 Problems

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Directional positions

- ▶ Bull spread
 - ▶ Bear spread
 - ▶ Collars
 - ▶ Box spreads
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Nondirectional positions

- ▶ Straddles
- ▶ Strangle
- ▶ Butterfly spread

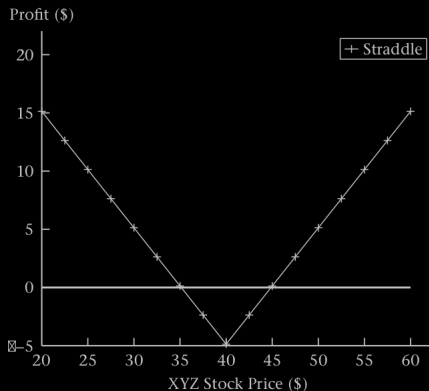
Investors who do not care whether the stock goes up or down,
but only how much it moves.

Investors are speculating on volatility.

Straddles

Straddle is the strategy of buying a call and a put with the same strike price and time to expiration.

A straddle is a bet that volatility will be high relative to the market's assessment



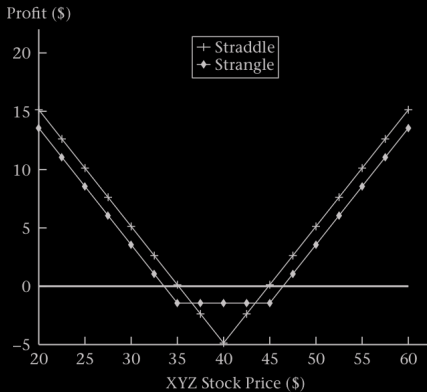
Strangle

Straddle is the strategy of buying an out-of-the-money call and put with the same time to expiration.

A strangle can be used to reduce the high premium cost, associated with a straddle.

Example 3.4-1 Draw profit diagram for 40-strike straddle and strangle composed of 35-strike put + 45-strike call.

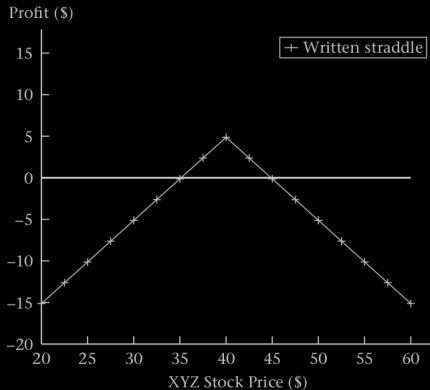
Solution.



Written straddles

Written straddle is the strategy of selling a call and put with the same strike price and time to maturity.

Unlike a purchased straddle, a written straddle is a bet that volatility will be low relative to the market's assessment



Butterfly spreads

Butterfly spreads = Insured wrien straddle
= Write a straddle + add a stragle

A butterfly spread insures against large losses on a straddle.

