USES OF OPTIONS MARKETS

• Why are options markets useful?
  – To obtain information for decision making
  – For trading
    • Speculation
    • Hedging (“insurance”)

USES OF OPTIONS: INFORMATION

• Obtain information for decision making:
  – Option premiums can be used to forecast price VOLATILITY
    • “Implied volatility”
    • All else equal, time value (and premium) increases with volatility
USES OF OPTIONS: SPECULATION

- Options greatly facilitate use of superior market information:
  - Little capital required
  - No need to handle commodity (e.g., transportation, storage, etc.)
  - As easy to speculate DOWN as UP
USES OF OPTIONS: SPECULATION

- (cont.)
  - Option holders (i.e., buyers)
    - No margins
    - “Unlimited” profit potential
    - Known cost (“premium”)
USES OF OPTIONS: SPECULATION

• Option writers (i.e., sellers)
  – Margins
  – “Limited” profit potential (maximum profit = “premium”)
  – “Unlimited” loss potential
OPTIONS ON FUTURES: ACCOUNTING

• Brokerage fee

• Margin ("performance bond"): Required for "writers" but not for "holders"
  – Initial margin
  – Maintenance margin
  – Margin call
  – Settlement price

USES OF OPTIONS: SPECULATION

• Advantages of speculating with options:
  – Holder’s maximum potential loss limited to premium paid to purchase option

BULLISH SPECULATOR
USES OF OPTIONS: SPECULATION

- Advantages of speculating with options:
  - Holder’s maximum potential loss limited to premium paid to purchase option
  - Options provide menu of alternatives

BULLISH SPECULATOR

Position Diagram: Net Profits for Short Futures vs. Holders of Various CALLs Until Expiration

BEARISH SPECULATOR

Position Diagram: Net Profits for Short Futures vs. Holders of Various PUTs Until Expiration
USES OF OPTIONS: SPECULATION

• Advantages of speculating with options:
  – Holder’s maximum potential loss limited to premium paid to purchase option
  – Options provide menu of alternatives
  – Options allow for better fit of expectations

BULLISH SPECULATOR WITH “TIGHT” EXPECTATIONS

Position Diagram: Bull Spread
Net Profits for Holder of a $3.5 CALL and Writer of a $4.5 CALL Until Expiration
Net Profits from Holding $3.5 Call
Profits from Writing $4.5 Call
Profits from Writing $4.5 Call
Profits from Holding $3.5 Call
Futures Price at Maturity
Net Profits
0.0 0.5 1.0 1.5 2.0 0.0 0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5
0 1 10 1 20 1 30 1 40 1 50 1 60 1 70 1 80 1 90 1 100
Futures at Maturity
Current Futures
Speculator’s subjective expectations about futures at maturity
BULLISH SPECULATOR WITH
"TIGHT" EXPECTATIONS

Position Diagram: Bull Spread
Net Profits for Holder of a $3.5 CALL and Writer of a $4.5 CALL Until Expiration

BEARISH SPECULATOR WITH
"TIGHT" EXPECTATIONS

Position Diagram: Bear Spread
Net Profits for Writer of a $1.5 PUT and Holder of a $2.5 PUT Until Expiration
USES OF OPTIONS: SPECULATION

- Advantages of speculating with options:
  - Holder’s maximum potential loss limited to premium paid to purchase option
  - Options provide menu of alternatives
  - Options allow for better fit of expectations
  - Options allow us to exploit superior information about VOLATILITY
SPECULATOR WITH HIGH VOLATILITY EXPECTATIONS

Position Diagram: Bottom Straddle
Net Profits for Holder of a $3 PUT and a $3 CALL Until Expiration

Net Profits from Holding $3 Put and $3 Call
Profits from Holding $3 Put
Profits from Holding $3 Call

Futures Price at Maturity

SPECULATOR WITH HIGH VOLATILITY EXPECTATIONS

Position Diagram: Bottom Straddle
Net Profits for Holder of a $3 PUT and a $3 CALL Until Expiration

Net Profits from Holding $3 Put and $3 Call
Profits from Holding $3 Put
Profits from Holding $3 Call

Futures Price at Maturity
Position Diagram: Strangle
Net Profits for Holder of a $2.5 PUT and a $3.5 CALL Until Expiration

-1.0  -0.5  0.0  0.5  1.0  1.5  2.0
Futures Price at Maturity

SPECULATOR WITH HIGH VOLATILITY EXPECTATIONS

SPECULATOR WITH LOW VOLATILITY EXPECTATIONS

Speculator's subjective expectations about futures at maturity
Position Diagram: Top Straddle
Net Profits for Writer of a $3 PUT and a $3 CALL Until Expiration

Profits from Writing $3 Put
Profits from Writing $3 Put and $3 Call

Futures Price at Maturity

Net Profits from Writing $3 Put and $3 Call

Position Diagram: Butterfly Spread
Net Profits from Writing One $2 PUT, One $4 PUT, and Holding Two $3 PUTs Until Expiration

Profits from Writing Two $3 Puts
Profits from Holding One $2 Put

Net Profits from Holding One $2 Put and One $4 Put, and Writing Two $3 Puts

Futures Price at Maturity

SPECULATOR WITH LOW VOLATILITY EXPECTATIONS

Position Diagram: Top Straddle
Net Profits for Writer of a $3 PUT and a $3 CALL Until Expiration

Profits from Writing $3 Put
Profits from Writing $3 Put and $3 Call

Futures Price at Maturity

Net Profits from Writing $3 Put and $3 Call

Profits from Writing $3 Put

Net Profits from Writing $3 Put and $3 Call

Futures Price at Maturity

Net Profits from Writing $3 Put and $3 Call

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Profits from Writing $3 Put

Net Profits from Writing $3 Put and $3 Call

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USES OF OPTIONS: SPECULATION

• Warning:
  – It is very difficult to consistently speculate profitably
  • Premiums already reflect expectations of market participants