Options on Futures (Book)

p 3 **Strategies:**

1. Strongly Bullish, high Volatil. (Vol)
2. ~~Mildly~~ Mildly bullish, low Vol
3. Stable, high Vol
4. Stable, low Vol.
5. Uncertain, high Vol.
6. Uncertain, low Vol.
7. Mildly bearish, low Vol
8. Strongly bearish, high Vol

Use options to hedge outright futures positions.

Rules (*) When Vol is high premium price

pg 6 Intrinsic & Time Value.

pg 12 **Delta**

- amount of change in premium compared with underlying price

$$\frac{\text{premium price move}}{\text{underlying price move}}$$

- Can be used for equating options position w/ futures position. (CMES)
  if Delta = .25, you need 4 options to = 1 future contract.
  Or look @ it this way: If delta is 30 then options move 30% as much as ~~future~~ futures. Delta is a hedging equation.
- Delta always assumes that future are = to 1.00
- Delta is shown as .25 but is mostly (in most cases) abbreviated to 25 (no decimal).
- Delta is/shows probability that the option will expire in-the-money. next page.

pg 17. Delta (cont.)

- Probability (cont.)

Time effect on delta: As time to maturity increases →

a) ITM - Delta's will decrease

b) ATM - Delta's are not substancially affected by time unless a short period of time remains (< 30 days)

c) OTM - Delta's will increase because there is more time for the futures price to reach the strike price.

- Delta neutral

Deltas on bullish positions offset deltas on bearish positions.

Example: Long 10 futures, bought 40 puts each w/delta of .25, then = Delta neutral.

→

Delta <cont>

p 917. Knowing Delta helps define:
- how much of a price increase/decrease is expected
- how long/short any position is.
- how likely position is to end up ITM.

Facts
- Delta is change w/ futures price change.
- Delta's can be positive or negative.

Positive delta's	Negative delta's
Long futures	Short futures
Long calls	Shorts Call
Short puts	Long Puts.

p 920 ## GAMMA

- GAMMA = Rate of change in Delta (ROC Delta)
  Example: If gold Delta = .50 & Gamma = .05
  then, ~~Price~~ Delta would rise to .55 (50+5)
  for a 1.00 move in gold futures price.
- GAMMA + Delta = 1.00 move in futures price

Note
- The higher the GAMMA the higher the risk
  → high Gamma = high risk
- GAMMA is opposite of Theta (Theta = time decay)
  → If time is working for you then gamma is working against you.

Positive Gamma	Negative Gamma
Long Call	Short call
Long Put	Short Put

Futures have no Gamma signs + or −

p22 THETA

- The closer to expiration the more time premium the options loses.
- Theta measures time decay.
- Theta measures the change in the options price as days to expiration ~~increase~~ decrease.
- Theta measures theoretical loss as one day goes by, assuming all other factors stay the same.

→ IF Theta = .02 then option premium will lose 2 tics or price units per day.

Time passing helps → Positive Theta | Negative Theta → Time passing hurts

Long call | Short call

Long Put | Short put.

Futures have no theta sign + or −.

p624

→ Effect of Expiration on Strategies

- At Expiration option is all Intrinsic Value because there is no time left.
- PRICE difference are greatest ATM
  PRICE difference is less DEEP ITM or DEEP OTM

~~Strangle~~

To do → Make a copy of the Strangle graph on pg 27.
It shows what happens as you move closer to expiration

pg 28 → Why we can have a big move in the futures & NOT in the options. (However, the example is from 1987 crash)

1929 VOLATILITY (VOL)

Trading options is trading Vol.

- Vol is a key factor in many option pricing models.

Learn more → • Vol helps determine price range for a certain period of time

Types of Vol

A) HISTORICAL: The measure of price movements over a specific period of time.

Equation: percentage price move for each 1 day squared.

~~% Daily price move~~ % Daily price move^2 for amount of time.

Meaning, that each individual day is squared, then added together, then divided by ~~number~~ number of days studied.

Pg 29

Summary

a) % price change for time period^2
b) Sum the squares
c) Divide by number of time periods
d) Take square root of answer

Then → ① $\sqrt{\text{ANSWER}}$ = STD Deviation (SD)

② SD * Number of trading days in year (252)

answer → SD * 252 = Historical Vol

- Don't use Hist. Vol. by itself

Pg 30 ⊛ - Use it in combination with Implied Vol

question: ~~The~~ does this mean that:

If Imp Vol is 25 & Hist. Vol is 30, then, the market is ~~over~~ mis priced?

Example → Bears Hist Vol = 30

Imp Vol = 25

Vol Trade ——→ Then, buy calls & sell futures

This trade is similar to a strangle & straddle.

The trader is betting the market is going to rally.

Probably because Imp Vol is < Hist Vol.

Vol Trade → The opposite of the trade above is:

Covered Call If Imp Vol ~~is~~ > Hist Vol then premiums are expensive. Sell calls, buy futures

Pg 30 Implied Volatility

- Very popular indicator.
- Traders know this about factors affecting options price:
  - A) Futures price B) Excercise Pec c) Interest rate
  - D) Time until expiration.

The UNKNOWN is Vol.

- Have a Implied Vol Range in mind.

Pg. 32. ## VEGA

- Sensitivity to Vol is measured by VEGA.
- Measures sensitivity of premium to a change in Imp Vol of underlying.
- If Vega = .505, then, for every 1% increase in Imp Vol the premium will move 50 Tics (or price units)

Positive (Increase in Vol helps)	Negative (Decrease in Vol hurts)
Long Calls	Short Calls
Long Puts	Short Puts.

Pg. 33 ## Outlooks & Price distribution

- Black Model uses lognormal price, price distribution.
- Many option pricing models assume bell shaped curve price distribution. (~~GAUSSIAN~~ (GAUSSIAN Price assumption?)
- They talk alot about Standard Deviation. They use it as a measure of risk.
- Measure → The higher the Standard Deviation Value, the more Volatile the market.
- To do Copy → Diagram on pg 35

Pg 39 ## Changes in Volatility

- When traders talk Vol, theyre talking Imp Vol. (Bullshit)
- Traders WANT TO Buy Premium when Vol is low & Sell Vol when Premium is High.
- Theoretically all Puts & Calls on future should have the same Implied Vol. In practice, though, they don't.

PG 39 → Interesting: Traders talk about buying 12% Imp Vol & selling 80% Imp Vol.

(*) Facts about Vol

Pg 39-40 A) Some Strikes are not traded during the day. So, settlement is based on activity in other strikes. Formulas change from Exchange to Exchange.

B) Locals will "Delta Neutral" their positions.

C) Increased Margins on futures will affect premium

D) Time Value & market expectations are priced according to Vol on the underlyer.

PG 40-41 Different Strikes - Diff Vols & Vol skew

Note → (*) · Imp Vol will be diff for each strike. Be aware of this. It can help determine if you should buy ITM or OTM

(*) · Note S&P: Higher Strikes have lower Imp Vols than lower ~~Strikes~~ Imp Vols.

TO DO → Copy Pg 42.

PG 43 Major Strategies D=Delta G=Gamma ~~T~~=Theta V=Vega

1) Long call ITM

· D+ G+ ~~T~~- V+

· Long is the same as Long futures + Long Put

~~· Buying to be protective~~

· Buying little time premium

· Buying Lotsa Intrinsic Value

· IF slight rise in futures price, then, Futures profit > Call profit

Long Call <cont.>

- If moderate price decline, then, futures lose < Call premium because of time decay.
- Good trade if: Expect small move up or continuing bull market w/ slight increase in Vol.

2) Long Call ATM

Δ > 50 Δ+ G+ T− Vega+

- Position has the most time value.
- Similar to using a STOP order in futures
- Use if large price move is expected or moderate increase in Vol.

3) Long Call OTM

- Vol Trade

Δ+ G+ T− V+

Equivalent Strat = Long futures + long ITM Put

Use if very bullish + expect increase in Vol

Risk/Reward when buying calls

- Limited risk & higher profit potential when you buy 2 calls to 1 futures contract.

If High Vol, then, consider 2 calls

If low Vol, then, buy futures

P672 Call Ratio backspread (done @ delta neutral)
- Do if expecting bull move.
- Pays for itself because premiums offset.
- Still make a little/lose a little if market falls.

P678 Put Ratio Backspread
- opposite

P682 Straddle

Vol Trade
- Buy put Buy call @ same X price.
- Use if High Vol expected.
- D+ offsets each other

Equivalent: 1. Long put + long futures = Delta neutral
2. Long call + Short futures = D " "

* P686 STRANGLE

Position: Long Strangle (combination)
Buy Put Buy call both OTM
Outlook: Volatility
Risk: Limites to premium
Reward: Unlimited
Break even: X + Net debit (upside)
X − Net debit (downside)
Time: Works Against Position
Vol: Works for Position
Delta: Initially offset each other depending on X price.

STRANGLE (cont)

- Equivalent strategy: ① Long Puts + Long futures = Δ neutral
  ② Long calls + Short futures = Δ neutral.

Use when: Major move is expected & Vol is going to increase.

⊛ Precious metals: Very expensive to do because ATM are cheapest.

PG 92 Synthetics

Creating a futures contract:

1) Buy call Sell put = long futures
2) Buy Put Sell call = Short futures

When to use: ① If futures are lock limit
② To Enter market @ favorable position
③ High/Risk reward position that leaves room for being wrong.

⊛ Note: Synthetic positions are the same as the "Equivalent strategies" I wrote in prior examples of options strategies earlier.

PG 93 Fences (Collars, Windows)

Use to protect existing positions (Future or Cash)
It "fences" in the price range.
It limits losses & further price gains.

→ More about synthetics PG 95–109

P6110 Expecting Stable to lower Vol
read about these when we're ready to write options.

P194 Butterfly X = STRIKE

Long Butterfly: Buy 1 ITM X call, Sell 2 ATM X calls
Buy 1 OTM X call

NON VOL ✳ TRADE W/LIMITED RISK

Use if: Expect little price movement over a month.
Risk: Limited to initial debit.
Reward: Limited. Best case scenario = Futures expire @ level of written calls.
Break Even: Downside = Lowest strike + net debit
Upside = highest X − Debit
Time: Works for position
Vol: Hurts
Delta: Close to neutral
Equivalent Strat: Long 1 ITM, Short 2 ATM Puts
Long 1 OTM Put
Want to do trade @ lowest debit possible.

VOL TRADE → P6196 SHORT Butterfly

Sell 1 ITM call, Buy 2 ATM calls
Sell 1 OTM call

OUTLOOK: Expect market to move sharply ~~or~~ up or Down

Risk: Difference between middle strikes & one of the outer strikes (provided the middle X is the same distance as outer) minus net credit

Short Butterfly (cont)

Reward: Net credit

Break Even: Downside = Lowest X + Net credit

Upside = highest X − Net credit

Time: Usually works against

Vol: Helps position

Deltas: usually close to neutral.

Equivalent Strat: Sell low X put, buy medium X put
Buy medium X call, Sell high X call.

- Not a favorite strategy used by traders because of limited upside.

(*) 2

Pg 217 There are some ideas for how to get out of a Strangle on this page.

P238 **Implied Vol**

- Buy low Vol, Sell high Vol
If you are buying a Bull Call spread & the X $ you're buying has a higher Imp Vol than the X $ you're selling then you're "giving up the edge".
- Before big economic releases, Imp Vol rises. You're basically paying higher premiums.
- * How much time is left until expiration?
→ The shorter the time the faster the decay.

Pg 239 Some Strategies for Trading OPTIONS
→ Interesting.

Vol Trades Look @ Pg 242 "ANY ZONE". It's a recap of some of the Vol trades covered in the book.

P 265 More strats but put into a nice "column" format. → Maybe put this stuff in excel?

To Do

To Do → Find an electronic Vocabulary list on options.

—END—

Summary of notes next page

Summary of Notes - Options on Futures

Delta

Delta: Amount of change in premium compared to underlying price.

EQUATION → Premium Price Move / Underlying price move = DELTA

Example → Underlying price move = 1.00
Premium price move = .30
.30/1.00 = 30%
also written as 30

Used for: ① Example → DELTA = .33
Therefore premium move 1/3 as much as underlyer.
OR → If Delta = .25, then
→ 4 options contracts = 1 futures contracts
(4 x .25 = 1)

② Example: Delta gives probability that option will finish (EXPIRE) ITM

Time Effect: Delta is for ITM options will decrease because there is more time for the underlyer to fall back to the X price.

(Also used for hedging (see above))

Time Effect <CONT>:
as time to expiration increases, then,
ITM - Delta is decrease
ATM - Delta is are not substantially effected unless < 30 days remain
OTM - Delta will increase

Positive Delta	Negative Delta's
Long Futures	Short Futures
Long Call	Short Call
Short Put	Long put

(Gamma) **GAMMA** (ROC for Delta)

- Measures the rate of change in Delta
- Example → Delta = .50

  Delta's Gamma = .05

  Therefore if Price in underlyer moves 1, then,

  Delta will = 55 (50 + 5)
- The higher the Gamma the greater the risk
- If time is working for you (THETA) then gamma is working against you

Positive Gamma	Negative Gamma
Long Call	Short Call
Long Put	Short Put

THETA (Time)

- Measures time Decay
- Measures change in options price as time moves towards expiration.
- Example: If theta = .02 then premium is expected to lose 2 tics (or units) per day as option moves towards expiration

Time →	Positive Theta	Neg Theta (Time passing hurts)
passing	Long Put	Short put
helps	Long call	Short call

VEGA

- Measures Sensitivity to Volatility
- Measures sensitivity of premium to change of underlyer's Imp Vol.

Example: If Vega = .505 then for every 1% move in premium, underlyer will move 50 ties.

Positive (Increase in Vol helps)	Negative (Decrease in Vol hurts)
Long calls	Short calls
Long Puts	Short Puts

Summary <cont>

DELTA = Amount of change in premium compared to underlyer.

Premium Move / Underlyer move = Delta

GAMMA = Rate of Change for Delta

THETA = Measures time decay

VEGA = Measures sensitivity of premium to change of underlyer's Imp Vol.

Long futures LF Long Call LC Long Put LP
Short futures SF Short Call SC Short Put SP

+DELTA -DELTA +G -G

	+D	-D	+G	-G	+T	-T	+V	-V
+D	(LF) SP LC	(SF) LP SC	LC LP	SC SP	LP LC	SP SC	LP LC	SP SC
-D		SF LP SC	LC	SC	LP	SC	LP	SC
+G	LC	LP	LC LP		LP LC		LP LC	
-G	SP	SC		SC SP		SC SP		SC SP
+T	LC	LP	LC LP		LP LC		LP LC	
-T	SP	SC		SC SP		SP SC		SC SP
+V	LC	LP	LP LC		LP LC		LP LC	
-V	SP	SC		SC SP		SP SC		SP SC

REORGAIZE

	+D	-D	+G	-G	+T	-T	+V	-V
+D	LC·SP LF	SC·LP SF	LC·LP	SC·SP	LC·LP	SC·SP	LC·LP	
-D		[redacted]	LC	SC	LP	SC	LP	
+G	LC	LP	[redacted]		LP·LC			
-G	SP	SC		[redacted]		SC SP		
+T	LC	LP	LC·LP		[redacted]			
-T	SP	SC		SC·SP		[redacted]		
+V	LC	LP	LC·LP		LC·LP		[redacted]	
-V	SP	SC		SC·SP		SC·SP		[redacted]