

Options on Futures (Book)

p 3 Strategies:

- ① Strongly Bullish, high Volatil. (Vol)
- ② ~~and~~ 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 ^(calls) position w/ futures position.
 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 ~~futures~~ futures. Delta is a hedging equation.
- Delta always assumes that futures 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 \rightarrow

a) ITM-Deltas will decrease

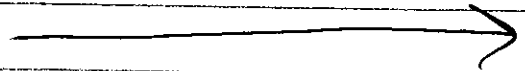
b) ATM-Deltas are not substantially affected by time unless a short period of time remains (< 30 days)

c) OTM-Deltas 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>

p917.

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

- Deltas change w/ futures price change.
- Deltas can be positive or negative.

Positive deltas

- Long futures
- Long calls
- Short puts

Negative deltas

- Short futures
- Shorts Call
- Long Puts.

p920

GAMMA

• GAMMA = Rate of Change in Delta (ROC Delta)

Example: If gold delta = .50 & Gamma = .05
 then, ~~the~~ 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

- Long Call
- Long Put

Negative Gamma

- Short call
- 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 ~~decreases~~ 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 ticks or price units per day.

Time passing helps	<u>Positive Theta</u>	<u>Negative Theta</u>	→ Time passing hurts
	Long Call Long Put Futures have no theta sign + or -	Short call Short put	

P6 2/9

→ 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.

Learn more →

- Vol is a key factor in many option pricing models.
- 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.
~~100%~~ % Daily price move² 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

- % price change for time period²
- Sum the squares
- Divide by number of time periods
- Take square root of answer

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

② $\text{SD} * \text{Number of trading days in year (252)}$

answer → $\text{SD} * 252 = \text{Historical Vol}$

Pg 30



- Don't use Hist. Vol. by itself
 - 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 ~~under~~^{MIS}priced?

Example → Beans HIST Vol = 30

Imp Vol = 25

VOL TRADE

→ Then, buy calls & sell futures

This trade is similar to a strangle & Straddle.

The trade is betting the market is going to rally. Probably because Imp Vol is < Hist Vol.

VOL TRADE → covered call

The opposite of the trade above is:

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) Exercise Pec
 - C) Interest rate
 - D) Time until expiration.

The UNKNOWN is Vol.

- Have a Implied Vol Range in mind.

Pg. 31.

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)
 Long Calls
 Long Puts

Negative
 (Decrease in Vol hurts)
 Short Calls
 Short Puts

Pg. 33 Outlooks & Price Distribution

- Black Model ~~assumes~~ ^{uses} lognormal price, price distribution.
- Many option pricing models assume bell shaped curve price distribution. (~~assumes~~ (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

Traders want to

- When traders talk Vol, they're talking Imp Vol. (bullshit)
- 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. (8)

* Facts about VOL

- Pg 39-40
- Some Strikes are not traded during the day. So, settlement is based on activity on other strikes. Formulas change from Exchange to Exchange.
 - Locals will "Delta Neutral" their positions.
 - Increased Margins on Futures will affect premium
 - Time Value & market expectations are priced according to VOL on the underlying.

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 ~~lots~~ IMP VOLS.

ToDo → Copy Pg 42.

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

1) Long call ITM

$$\bullet D + G + \cancel{T} - V +$$

• Long is the same as Long futures + Long Put

~~Buying lotsa premiums~~

• Buying little time premiums

• Buying Lotsa Intrinsic Value

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

Long Call <cont.>

(9)

- 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

$$D > 50 \quad D + G + T - \text{Vega} +$$

- 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

$$D + G + T - V +$$

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

PG 72 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.

PG 78 Put Ratio Backspread
- opposite

PG 82 Straddle

VOL
Trade

- Buy put Buy call @ same X price.
- Use if High Vol expected.

↳ offsets each other

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

* PG 86 STRANGLE

Position: Long Strangle (combination)

Buy Put Buy call both OTM

Outlook: Volatility

Risk: Limited to premium

Reward: Unlimited

Break Even: $X + \text{net debit (upside)}$

$X - \text{net debit (downside)}$

Time: Works Against Position

Vol: Works for Position

Delta: Initially offset each other depending on X price.

STRANGLE (cont)

10

- 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 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 (Futures 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 P6196 SHORT Butterfly

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

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

Risk: Difference between middle strike & 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

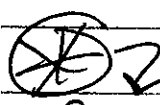
Time: Usually works against

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.



Pb 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 Jim buying has a higher Imp Vol than the X Jim selling then Jim "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
To do

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

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 \rightarrow Premium Price Move / Underlying price move = DELTA

Example \rightarrow Underlying price move = 1.00

Premium price move = .30

$.30 / 1.00 = 30\%$

also written as 30

① Used for: Example \rightarrow DELTA = .33

Therefore premium move 1/3 as much as underlying.

OR \rightarrow If Delta = .25, then

\rightarrow 4 options contracts = 1 futures contracts
($4 \times .25 = 1$)

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

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

(Also used for hedging (see above))

Time Effect (cont):

as time to expiration increases, then,

ITM-Deltas decrease

ATM-Deltas are not substantially affected unless < 30 days remain

OTM-Delta will increase

Positive Delta

Long Futures

Long Call

Short Put

Negative Delta's

Short Futures

Short Call

Long put

(Gamma)

GAMMA (Roc for Delta)

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

$$\text{Delta's GAMMA} = .05$$

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

Long Call

Long Put

Negative GAMMA

Short Call

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 ticks (or units) per day as option moves towards expiration

Time Passing helps → Positive Theta
Long Put
Long Call

Neg Theta (Time Passing hurts)
Short put
Short call

VEGA

- Measures
- Sensitivity to Volatility
 - Measures sensitivity ^{OF} premium to change of underlying's Imp Vol.

Example: If Vega = .505 then for every 1% move in ~~underlying~~ premium, underlying will move 50 times.

Positive (Increase in Vol. helps)

Long calls

Long Puts

Negative (Decrease in Vol. hurts)

Short calls

Short Puts

Summary (cont)

DELTA = Amount of change in premium compared to underlying.

$$\text{Premium Move} / \text{Underlying move} = \text{Delta}$$

GAMMA = Rate of Change for Delta

THETA = Measures time decay

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

Long futures^{LF} Long Call^{LC} Long Put^{LP}
 Short futures^{SF} Short Call^{SC} ~~Long~~ Short Put^{SP}

+DELTA -DELTA +G -G

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

REORGANIZE

	+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		SC LP	LC	SC	LP	SC	LP	
+G	LC	LP	LC LP		LP LC			
-G	SP	SC		SC SP		SC SP		
+T	LC	LP	LC LP		LP LC			
-T	SP	SC		SC SP		SP SC		
+V	LC	LP	LC LP		LC LP		LP LC	
-V	SP	SC		SC SP		SC SP		SP SC