## Covered Example -> Vol Trading (illustrates what true 'bid-offer' on an option is or could be...)

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| Scenario #1: | bid | ask | Notes: |
|---|---|---|---|
| TYH3 | 133-24+ | 133-25 | Underlying future -> 10yr CBOT future |
| | | | -10yrs trade in pluses or half-tics |
| | bid | ask | |
| TYF3C 134 | 19 | 20 | Jan 134 call on the 10yr CBOT future; expires mid-December |
| | x $15.625 | x $15.625 | - options trade in $64^{ths}$ (of a 1000 bucks) |
| | $296.88 | $312.50 | |

**Scenario #1:** quote of 19b/20a covered against 25's with delta 0.42; what does that mean?

(a) -if trying to buy a 1000 of the calls and lifting the offer, you'd be paying:

1000 x 20 x $15.625 -------> $312,500.00

(Many users/hedgers/traders/non-vol prop desks either rest an order and wait for the mkt to come to them or simply hit the bid/ lift the offer. But one can just do the order 'covered', almost always get a better fill, and then immediately get out of the attached futures to get back to pure option coverage.)

(b1) -since this is a covered trade and hence delta neutral, you'd also be getting 420 (1000 x 0.42) short futures (TYH3) at 133-25. Note that this is the offered side and thus an 'edge' has been received.

(b2) -when we quoted this package, the future had 800 on the bid, 5000 on the offer, so we could argue that when the future traded again, it most likely would print (no guarantee) at 133-24+ - and thus one would be able to get out of the futures leg with a half-tick on 420 futures. Here's the calc:

420 x $15.625 -> $6,562.50

(b3) -if we were successful in getting out of the futures on the bid, we could calculate our true cost of the calls:

| | | | |
|---|---|---|---|
| | $312,500.00 | | |
| less -> | -$6,562.50 | | |
| | $305,937.50 | divide this by 1000 and then by $15.625 ---> | 19.58 |

(c) -since no guarantee of getting out on the bid side on the futures leg, you'd have to, to be fair, call the true ask/offered price to be ~19.75 (guesstimate)

| Scenario #2: | bid | ask | Notes: |
|---|---|---|---|
| TYH3 | 133-24+ | 133-25 | Underlying future -> 10yr CBOT future |
| | | | -10yrs trade in pluses or half-tics |
| | bid | ask | |
| TYF3C 134 | 19 | 21 | Jan 134 call on the 10yr CBOT future; expires mid-December |
| | x $15.625 | x $15.625 | - options trade in $64^{ths}$ (of a 1000 bucks) |
| | $296.88 | $328.13 | |

**Scenario #2:** new quote of 19b/21a covered against 25+'s this time with a delta of 0.42; what does that mean?

(a) -if trying to buy a 1000 of the calls and lifting the offer, you'd be paying:

1000 x 21 x $15.625 -------> $328,125.00

(b1) -since this is a covered trade and hence delta neutral, you'd also be getting 420 (1000 x 0.42) short futures (TYH3) at 133-25+. Note that this a half tick better than the current offered side.

(b2) -when we quoted this package, the future had 800 on the bid, 5000 on the offer, so we could argue that when the future traded next, it most likely would print (again, no guarantee) at 133-24+ - and thus one would be able to get out of the futures leg with a full-tick on 420 futures. Here's the new calc:

420 x $31.25 --> $13,125.00

(b3) -if we were successful in getting out of the futures on the bid, we could calculate our true cost of the calls:

| | | | |
|---|---|---|---|
| | $328,125.00 | | |
| less -> | -$13,125.00 | | |
| | $315,000.00 | divide this by 1000 and then by $15.625 ---> | 20.16 |

(c) -the above is the second quote we got on this 'covered call, delta neutral' trade; the pit simply widened out the offer (call it a throwaway quote if you will as the resulting price, ~20.16, was worse than the first quote we received). Now onto another scenario below where we arbitrarily modify delta to affect price.

| Scenario #3: | bid | ask | Notes: |
|---|---|---|---|
| TYH3 | 133-24+ | 133-25 | Underlying future -> 10yr CBOT future |
| | bid | ask | |
| TYF3C 134 | 19 | 20 | Jan 138 call on the 10yr CBOT future; expires mid-December |
| | x $15.625 | x $15.625 | we need to buy 100 |
| | $296.88 | $312.50 | |

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**Scenario #3:** new quote of 19/20 covered against 26s but this time we override/use a delta of only 0.10; what does that mean?

(a) -if trying to buy a 100 (instead of a 1000) of the calls and lifting the offer, you'd be paying:

100 x 20 x $15.625 -------> $31,250.00

(b1) -since this is a covered trade and hence delta neutral, you'd also be getting 10 (100 x 0.10) short futures (TYH3) at 133-26. Note that this a full tick better than the current offer.

(b2) -when we quoted this package, the future had 800 on the bid, 5000 on the offer, so we could argue that when the future traded next, it most likely would print (again, no guarantee) at 133-24+ - and thus one would be able to get out of the futures leg with a full 1.5 ticks on 10 futures. Here's the new calc:

| | | |
|---|---|---|
| if buying back 24+s | 10 x 1.5 x $31.25 --> | $468.75 |
| or if buying back 25s | 10 x 1 x $31.25 --> | $312.50 |

(b3) -if we were successful in getting out of the futures on the bid, we could calculate our true cost of the calls:

| | | | |
|---|---|---|---|
| | $31,250.00 | | |
| less -> | -$468.75 | | |
| | $30,781.25 | divide this by 100 and then by $15.625 ---> | 19.70 |

(b4) -if we got out of the futures on the offer, we could calculate our true cost of the calls:

| | | | |
|---|---|---|---|
| | $31,250.00 | | |
| less -> | -$312.50 | | |
| | $30,937.50 | divide this by 100 and then by $15.625 ---> | 19.80 |

Remember by definition, a .10 delta option in treasury options moves 2 option ticks for every 10 futures ticks. This means you will have quite a bit of wiggle room to improve/narrow the spread. (Options ticks in 64th; futures ticks in 32nds)
(commish on 'covered' legs -the buy/sell- would be adjusted so as to not overwhelm execution savings)

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