

Risk Management and Derivatives | Lecture 9

Reading the Option Board and the Writer's Obligation

In Class Group Activity

· SJTU Summer School 2026 · Fatih Kansoy

How this block runs. You work in your home group of four or five, textbook open. Roles rotate today: **Scribe** (writes the answer), **Reporter** (speaks at the microphone), **Sceptic** (must raise one objection), **Timekeeper**. All money today is in US dollars (\$), with one UK example in pounds (£) and one EU example in euros (€). Every listed contract covers 100 shares unless stated.

- **Phase 1, Concept checks (~10 min).** For each question you vote on your own first. Then you talk for about 90 seconds with the people next to you, and vote again. Do not talk before the first vote.
- **Phase 2, Desk problem (~20 min).** One problem in parts. Your Reporter presents one part when the microphone reaches your group. Then we solve it together, part by part.
- **Phase 3, Case (~25 min).** You read one real story. The ending is hidden on purpose. You answer four questions and take a position. Then we reveal what happened.

A short word list for this block. When you **buy** an option you pay a **premium** and gain a right; your loss can never be more than that premium. When you **write** (sell) an option you collect the premium and take on an **obligation** that the clearing house will enforce. **Intrinsic value** is what an option is worth if exercised right now; **time value** is the rest of the premium. An option is **in the money (ITM)** if exercising now would pay off, **out of the money (OTM)** if it would not. A **naked** write means you do not already hold the shares (or the cash) behind the obligation. The **OCC** (the Options Clearing Corporation) is the central guarantor that stands behind every US listed option and collects **margin** from writers. When a holder exercises, the clearing house picks a writer to deliver, and that writer is said to be **assigned**. To **offset** a position is to close it by selling the option back on the board; a sale keeps the option's remaining time value, while exercise collects intrinsic value only.

Phase 1 – Concept checks

~10 MIN

ConceptTest 1. A friend tells you: “I wrote one naked call on a \$50 stock and collected a \$3 premium. The worst that can happen is the stock going to zero, so my biggest possible loss is small.” What is the worst case on this position? Choose the best answer.

- (a) A loss capped at the \$3 premium. The premium is collected up front, so like the buyer the writer can never be out more than the money that changed hands on day one.
- (b) A loss that is large but floored. The stock cannot fall below zero, so the worst case is a fall of \$50 a share, less the \$3 premium already collected.
- (c) A loss capped at the margin deposit. The broker holds collateral against the position, and once that deposit is exhausted the position is closed, so the deposit sets the ceiling.
- (d) A loss with no ceiling. The writer must deliver at \$50 however high the stock climbs, so every dollar above \$53 deepens the loss; the \$3 is the most they can gain.

ConcepTest 2. You paid \$4.00 per share for one call, strike \$60, on a US stock. At expiry the stock closes at \$62.50, so exercising pays \$2.50 per share, less than the \$4.00 you paid. Ignoring fees, what is the right move at the close? Choose the best answer.

- (a) Exercise. The \$4.00 is spent whatever you do now; the live choice is \$2.50 per share against nothing, and taking it turns a \$400 loss on the trade into a \$150 one.
- (b) Do not exercise. Exercising locks in a losing trade: the \$2.50 payoff is below the \$4.00 premium, so a holder who exercises here confirms a loss that walking away avoids.
- (c) Do not exercise. Exercise means paying \$6,000 for the shares, so it puts new money into a losing position; letting the option lapse costs nothing further and ends the position.
- (d) Exercise. With the stock above the strike the call finishes in the money, so the trade as a whole ends in profit: exercising collects \$2.50 per share, a \$250 gain on the contract.

ConcepTest 3. You hold one call, strike \$60, on a US stock trading at \$66. The company announces a 2-for-1 stock split, and the share price will halve to about \$33. What happens to your option? Choose the best answer.

- (a) It becomes worthless. After the split the shares trade at \$33, far below the \$60 strike, so the right to buy at \$60 is deep out of the money and will lapse.
- (b) Its terms are adjusted together: the strike becomes \$30 and the contract grows to 200 shares, so the option is in the money by \$600 before the split and \$600 after it.
- (c) Only the strike is rewritten, from \$60 to \$30, while the contract stays at 100 shares; the call remains in the money, but only by \$300 rather than the \$600 before.
- (d) The old series is closed out: the exchange settles the \$60 call in cash at its \$6 intrinsic value and lists fresh \$30-strike contracts for holders who want to stay in.

Phase 2 – The desk problem

~20 MIN

Read the board, set the writer's margin, sketch the downside

The setting. You are on the equity-options desk at a London-based broker. A retail client has sent in orders on a US stock, and the risk team needs you to read the board, set the writer's margin, and sketch the downside before anything is cleared. All money is in US dollars (\$). Every contract covers 100 shares.

The option board. The underlying stock is ZNT, current price $S = \$48.00$. Three contracts are listed, US-style, 100 shares per contract:

contract	type	strike K	quoted premium
C45	call	\$45	\$4.50
P50	put	\$50	\$3.80
C52	call	\$52	\$1.80

(a) Read the board. Split each premium into intrinsic value and time value, and label moneyness. Use these rules: intrinsic value of a call = $\max(S - K, 0)$; intrinsic value of a put = $\max(K - S, 0)$; time value = premium – intrinsic value. A call is in the money if $S > K$; a put is in the money if $S < K$.

- (1) For C45 (call, $K = 45$), work out the intrinsic value, the time value, and the moneyness.
- (2) For P50 (put, $K = 50$), work out the intrinsic value, the time value, and the moneyness.
- (3) Check: is each time value positive, as it must be for a live option?

(b) The naked call writer's margin. The client wants to write one C52 call (strike \$52, premium \$1.80), naked. The broker margin rule, per share, is the *greater* of:

$$(A) \ 0.20 \times S + \text{premium} - \text{out-of-the-money amount}, \quad (B) \ 0.10 \times S + \text{premium}.$$

Then multiply by 100 shares. The out-of-the-money amount of a call is $\max(K - S, 0)$.

- (1) Is C52 in or out of the money? Work out its out-of-the-money amount.
- (2) Compute method (A) and method (B) per share.
- (3) Take the greater, multiply by 100, and state the margin per contract. Compare it with the \$180 premium the client received.

(c) Exercise and assignment at expiry. At expiry, compute the payoff and the profit to the **holder** and to the **writer** in two scenarios. Ignore interest.

- (1) Stock finishes at $S_T = \$55$, the C45 call (premium \$4.50). Find the holder's payoff and profit, then the writer's profit. State both per share and per contract.
- (2) Stock finishes at $S_T = \$44$, the P50 put (premium \$3.80). Find the holder's payoff and profit, then the writer's profit, per share and per contract.
- (3) Check: in each scenario, does holder profit = minus writer profit?

(d) A corporate-action adjustment. The client holds one C45 call (strike \$45, 100 shares). The company declares a 2-for-1 split, and the stock price halves from \$48 to \$24. Show that the option's value is preserved.

- (1) State the new strike and the new contract size.
- (2) Work out the intrinsic value of the position before the split, $100 \times (48 - 45)$.
- (3) Work out the intrinsic value after the split, $200 \times (24 - \text{new strike})$. Are the two equal?

(e) The written naked call, and its unlimited tail. The client writes one C52 (strike \$52, premium \$1.80, $\times 100$). The writer's profit at expiry per contract is $(\text{premium} - \max(S_T - 52, 0)) \times 100$.

- (1) Compute the writer's profit at $S_T = \$50, \$52, \$60$ and \$80.
- (2) State the breakeven stock price.
- (3) Look at the four numbers as S_T rises. What is the most the writer can gain? Is there any ceiling on what the writer can lose?

Extension (for fast groups). Choose one.

- **(E1) Board vocabulary.** Explain the difference between an option's last-trade price, its bid-ask quote, and its open interest. Note that volume (contracts traded today) can exceed open interest (contracts still outstanding). For a board showing last trade \$1.80, bid \$1.70 / ask \$1.90, open interest 4,000, where is the realistic fill, and how many live obligations are in the market? Volume is a flow (today's trades); open interest is a stock (contracts alive tonight). What does heavy volume with *falling* open interest tell you?
- **(E2) Offset before exercising.** You hold one C45 call (intrinsic value \$3.00 from part (a)) and the board bids \$4.50 for it. Compare two exits: sell the option at the bid, or exercise it now. Compute the cash each exit collects per contract, name the difference, and state the standing rule for choosing between them.

An income strategy on the “widow-maker”, November 2018 (United States)

How to run this. Read the story with your group. The ending is hidden on purpose. Your group must take a position on the four questions and hold your decision. Do not search the internet. Use only what you know from the lecture. I will reveal what happened only after every group has answered.

The story. OptionSellers.com was a money-management firm in Tampa, Florida, run by James Cordier and founded in 1999. By 2018 it managed roughly \$150 million for about 290 high-net-worth client accounts. Its strategy had a brand name, FUDOM: *Fundamentals combined with Deep Out-of-the-Money options*. In plain terms, the firm *sold naked options* on physical commodities (natural gas, crude oil, gold, grains) and collected the premium.

Most of those far-out-of-the-money options expired worthless, so most months the accounts earned a steady income. Cordier marketed this to clients as a high-probability income strategy. One of his favourite trades was selling naked *calls* on natural gas. Natural gas traders have a nickname for that market: the *widow-maker*, because it can move violently on a cold-weather forecast.

In early November 2018, US natural gas in storage was about 16 to 19 per cent below the five-year average, the lowest going into winter in years. The firm’s accounts were short naked calls into that setup.

The story stops here.

Four discussion questions (answer all four in your group; take a position):

1. **Gain and loss.** On a naked short call, what is the most the writer can *gain*, and what is the most they can *lose*? Tie this to desk part (e).
2. **High-probability.** The firm told clients this was “high-probability”. In what sense is that true, and in what sense is it dangerously misleading?
3. **The sudden move.** If natural gas suddenly jumps 15 to 20 per cent in a few days, what happens to the value of a naked short call, and what does the clearing broker demand from the account that day? The lecture’s phrase: margin moves with danger.
4. **Can you lose more than you put in?** The premium had already been collected and the accounts looked profitable for months. Can a client lose *more* than the money they put in? Take a position before the reveal.

End of activity handout. Solutions are distributed after the block.