Options Markets

FRM Part I

1 A story: the price lock

- Pay a small fee for a right, not a duty
- Painting locked at $50,000 for a month
- Price rises: use the right and save
- Price falls: walk away, lose only the fee

IN THE LESSON

- Imagine you want to buy a rare painting that a gallery sells for fifty thousand dollars.
- You think it may soon be worth more, but you are not sure.
- So you pay the gallery a small fee for a promise.
- For the next month you may buy the painting for fifty thousand, whatever happens to its price.
- If it jumps to sixty thousand, you use the promise and save ten thousand dollars.
- If it falls to forty thousand, you simply walk away and lose only your small fee.
- That promise is an option.
- You pay a fee for a right, not a duty.
- The right is what makes the payoff bend, and everything in this lesson grows from that one idea.

2 Calls, puts, buyers and writers

- Call = right to BUY at the strike. Put = right to SELL
- Holder has the right; the writer carries the obligation
- American: exercise any time up to expiry
- European: exercise only at expiry

IN THE LESSON

- Now the precise words.
- A call option gives its holder the right, but not the obligation, to buy the underlying asset at a fixed price called the strike price.
- A put option gives the right to sell at the strike.
- The person on the other side is the writer, who sells the option, collects the fee and carries the obligation.
- The holder chooses, the writer must obey.
- Options also differ in timing.
- An American option can be exercised at any time up to its expiry date.
- A European option can be exercised only at expiry.
- The names say nothing about where the option trades.
- Most of what we compute in this lesson looks at the moment of expiry.

3 What options are used for

Three uses of options

Use	How it works
Hedge	Protective put: a floor
Speculate	Small fee, big position
Earn income	Collect fee, bear risk

IN THE LESSON

- Why would anyone trade options?
- There are three main reasons.
- The first is hedging.
- Suppose you own shares and fear a fall.
- A protective put, which is a put bought alongside the shares, sets a floor under your loss while leaving your gains open.
- It works like insurance.
- The second is speculation.
- An option costs far less than the share, so a small amount of money controls a large position.
- That is leverage.
- A correct view can multiply the money, and a wrong view can lose the whole fee.
- The third is income.
- A writer collects the fee up front, and keeps it if the option expires worthless, but accepts the risk of a large loss.

4 Intrinsic value and moneyness

Call intrinsic = max(S − K, 0)
Put intrinsic = max(K − S, 0)

Share price, S	Price now (at expiry for payoff)
Strike price, K	Price fixed in the contract
Intrinsic value	Never below zero
In the money	Call: S > K. Put: S < K
At the money	S = K; otherwise out of the money

IN THE LESSON

- Moneyness compares the share price, written S, with the strike, written K.
- A call is in the money when the share price is above the strike, because buying at the strike is a bargain.
- A put is in the money when the share price is below the strike, because selling at the strike beats the market.
- When the share price equals the strike, both are at the money.
- Otherwise the option is out of the money.
- Intrinsic value is what exercising would be worth right now.
- For a call it is the larger of the share price minus the strike, and zero.
- For a put it is the larger of the strike minus the share price, and zero.
- Watch the order of the letters.

5 Example 1: moneyness of four options

Illustration: every option has strike K = $50

Call, share at 55	55 > 50: in the money	**$5**
Put, share at 55	55 > 50: out of the money	**$0**
Put, share at 42	42 < 50: in the money	**$8**
Call, share at 50	equal: at the money	**$0**

IN THE LESSON

- Let us test four options, all with a strike of fifty dollars.
- These are illustrations.
- First, a call with the share at fifty-five.
- The share is above the strike, so the call is in the money, and its intrinsic value is fifty-five minus fifty, five dollars.
- Second, a put with the share at fifty-five.
- Selling at fifty when the market pays fifty-five is silly, so the put is out of the money, with intrinsic value zero.
- Third, a put with the share at forty-two.
- Now selling at fifty beats the market, so it is in the money, worth eight dollars.
- Fourth, a call with the share at exactly fifty.
- At the money, intrinsic value zero.
- The same share price can put a call in the money and a put out.

6 Option values: a first look at time value

- Option price = intrinsic value + time value
- Out of the money: intrinsic zero, price still positive
- Time value shrinks to zero at expiry
- Moneyness is a position; intrinsic value is the dollars

IN THE LESSON

- Notice that intrinsic value is not the same as the price of an option.
- An option with time left is usually worth more than its intrinsic value, because the share price may still move in your favor before expiry.
- The extra amount is called time value.
- An out of the money option has no intrinsic value at all, yet it still sells for a positive fee, because it might finish in the money.
- Only at expiry do the two measures meet.
- This matters later, when we ask whether a holder should exercise or simply sell.
- For now, remember that moneyness describes where the share price sits relative to the strike, and intrinsic value turns that position into dollars.

7 From payoff to profit

Buyer profit = payoff − premium
Writer profit = premium − holder payoff

Payoff at expiry	Call: max(S−K,0); put: max(K−S,0)
Premium	Paid by buyer, kept by writer
Profit	Zero at the breakeven price
Breakeven	Call: K+P; put: K−P (P = fee)

IN THE LESSON

- Now we move from payoff to profit.
- The payoff is what the option is worth at expiry.
- The profit also counts the fee.
- For the buyer, profit equals the payoff minus the premium paid.
- For the writer, profit equals the premium received minus what the holder is paid.
- The writer's payoff is simply the negative of the holder's, so the two sides always sum to zero before the premium.
- Setting the buyer's profit to zero gives the breakeven share price.
- For a long call it is the strike plus the premium.
- For a long put it is the strike minus the premium.
- These lines are the building blocks for every position in this lesson.

8 Example 2: a long call

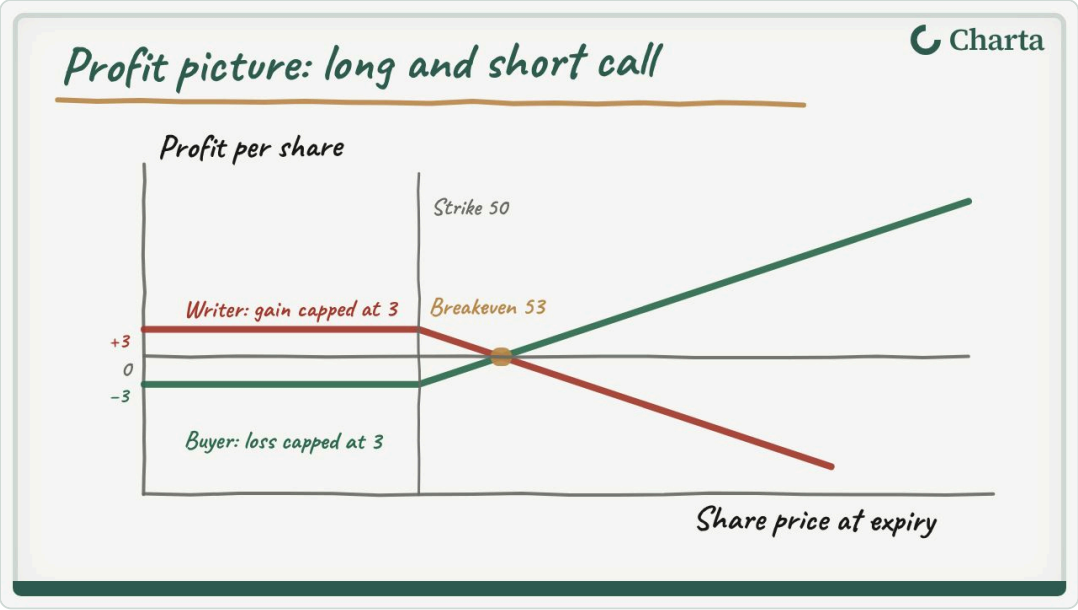
Illustration: long call, strike $50, premium $3 per share

Share at 46	0 − 3	**−$3**
Share at 53 (breakeven)	3 − 3	**$0**
Share at 60	10 − 3	**+$7**
Worst: share at 50 or below	premium paid	**−$3**

IN THE LESSON

- Example two.
- You buy a call with a strike of fifty and pay a premium of three dollars per share.
- If the share finishes at forty-six, the call is abandoned.
- The payoff is zero, so the profit is minus three, the whole premium.
- If it finishes at fifty-three, the payoff is three, and the profit is three minus three, zero.
- That is the breakeven, the strike plus the premium.
- If it finishes at sixty, the payoff is ten, so the profit is ten minus three, seven dollars.
- The last row is the worst case.
- However far the share falls, you can lose only the three dollars you paid.
- The gain, meanwhile, has no ceiling.

9 Profit picture: long and short call



IN THE LESSON

- Here is the profit picture for that call.
- Across the bottom is the share price at expiry, and up the side is profit.
- The grey line is zero.
- The green line is the buyer.
- To the left of fifty it lies flat at minus three, the premium paid, because the call is abandoned.
- At fifty it bends and climbs one for one, crossing zero at fifty-three, the breakeven.
- The red line is the writer, the mirror image.
- It is flat at plus three, the premium kept, then falls without limit once the share passes fifty, crossing zero at fifty-three.
- This is the key asymmetry.
- The buyer's loss is capped at the premium, while the short call has unlimited loss and a small, capped gain.

10 Example 3: a long put

Illustration: long put, strike $50, premium $2 per share

Share at 55	0 − 2	**−$2**
Share at 48 (breakeven)	2 − 2	**$0**
Share at 40	10 − 2	**+$8**
Best case: share at 0	50 − 2	**+$48**

IN THE LESSON

- Example three.
- You buy a put with a strike of fifty and pay a premium of two dollars per share.
- If the share finishes at fifty-five, the put is abandoned and the profit is minus two.
- If it finishes at forty-eight, the payoff is two and the profit is zero.
- That is the breakeven, the strike minus the premium.
- If it finishes at forty, the payoff is ten, so the profit is ten minus two, eight dollars.
- The best case is the last row.
- A share cannot fall below zero, so the most the put can pay is fifty, and the most you can make is fifty minus two, forty-eight dollars.
- Compare that with the call, which has no ceiling.
- The put's best case is bounded.

11 Example 4: the writer's side

Illustration: short call (premium $3) and short put (premium $2), strike $50

Short call, share at 60	3 − 10	**−$7**
Short call, share at 45	premium kept	**+$3**
Short put, share at 40	2 − 10	**−$8**
Short put, share at 0	2 − 50	**−$48**

IN THE LESSON

- Example four turns the contracts around.
- First, write the call with strike fifty and premium three.
- If the share finishes at sixty, you must hand over a share worth sixty for fifty, a payoff of minus ten.
- Add the premium you received: three minus ten, a loss of seven dollars.
- If the share finishes at forty-five, the call is abandoned and you keep the three dollars, your best case.
- Now write the put with strike fifty and premium two.
- If the share finishes at forty, you lose ten but received two, so the result is minus eight.
- In the worst case the share goes to zero.
- You lose fifty, less the two received, forty-eight dollars.
- A short put loses at most the strike minus the premium.

12 Four positions compared

Strike $50, call premium $3, put premium $2

Position	Breakeven; worst; best
Long call	BE 53; lose 3; gain unlimited
Long put	BE 48; lose 2; gain up to 48
Short call	BE 53; lose unlimited; gain 3
Short put	BE 48; lose up to 48; gain 2

IN THE LESSON

- Let us gather the four positions, still with a strike of fifty, a call premium of three and a put premium of two.
- The long call breaks even at fifty-three, can lose at most three, and can gain without limit.
- The long put breaks even at forty-eight, can lose at most two, and can gain up to forty-eight.
- The short call breaks even at the same fifty-three, gains at most three, and can lose without limit.
- The short put breaks even at forty-eight, gains at most two, and can lose up to forty-eight.
- Notice the pattern.
- Each writer's row is the mirror of the matching buyer's row.
- The buyer's worst case is small and known.
- The writer's worst case is large, and for a call, endless.

13 Example 5: contracts and multipliers

Illustration: 5 contracts of the long call, 100 shares each, share at 60

Payoff per share	60 − 50	**$10**
Profit per share	10 − 3	**$7**
Profit per contract	7 × 100	**$700**
Profit, five contracts	700 × 5	**$3,500**
Most you can lose	3 × 100 × 5	**$1,500**

IN THE LESSON

- Everything so far was per share.
- Real contracts are bigger.
- A standard US stock option covers one hundred shares, and you may trade many contracts.
- Take our long call, strike fifty, premium three, and suppose the share finishes at sixty.
- Per share the payoff is ten and the profit is seven.
- For one contract, multiply by one hundred: seven hundred dollars.
- If you hold five contracts, multiply by five: three thousand five hundred dollars.
- The most you could have lost is the premium of three, times one hundred, times five, which is fifteen hundred dollars.
- Forgetting either multiplier, the one hundred shares or the number of contracts, is a classic error, so write both on the page every time.

14 Example 6: a straddle

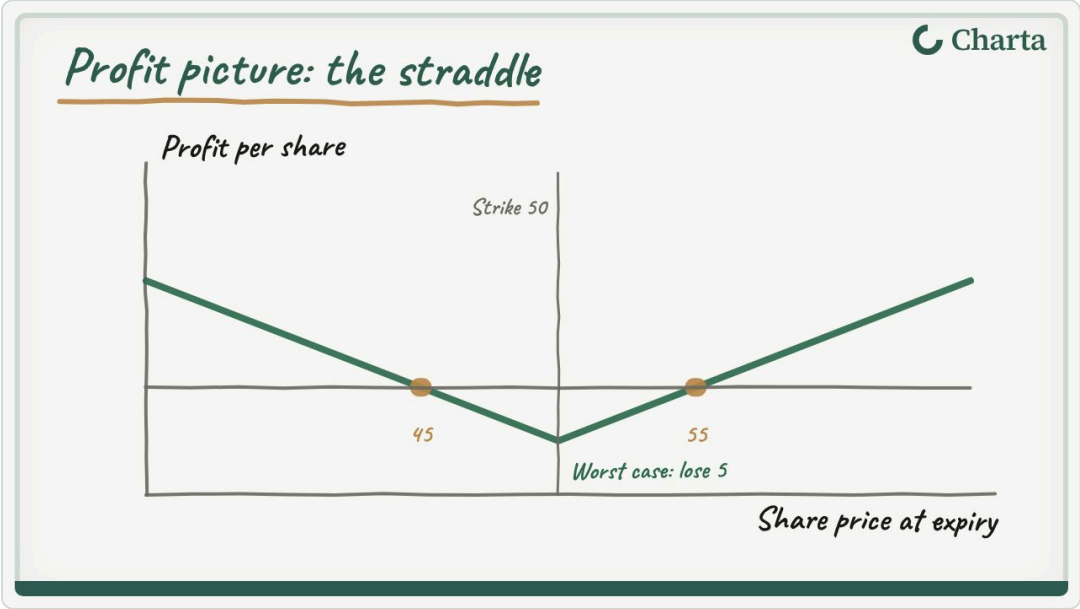
Illustration: long call (premium $3) + long put (premium $2), strike $50

Net premium paid	3 + 2	**$5**
Share at 50	0 − 5	**−$5**
Share at 62	12 + 0 − 5	**+$7**
Share at 38	0 + 12 − 5	**+$7**
Breakevens	50 ± 5	**45 and 55**

IN THE LESSON

- Combinations work by adding the payoffs and the net premium of every leg.
- A straddle buys a call and a put with the same strike.
- Take strike fifty, the call premium of three and the put premium of two.
- The net premium is three plus two, five dollars.
- If the share finishes at fifty, both options expire worthless and you lose the whole five, the worst case.
- If it finishes at sixty-two, the call pays twelve, the put pays nothing, and the profit is twelve minus five, seven.
- If it finishes at thirty-eight, the put pays twelve, the call nothing, and again the profit is seven.
- The straddle breaks even five dollars either side of the strike, at forty-five and fifty-five.
- It bets on a big move, in either direction.

15 Profit picture: the straddle



IN THE LESSON

- Here is the straddle.
- Share price at expiry runs along the bottom and profit up the side.
- Because we add the two legs, the picture is a valley.
- At the strike of fifty the profit is at its lowest, minus five, the total premium.
- Move away from the strike in either direction and the profit rises one for one.
- It crosses zero at forty-five on the left and at fifty-five on the right, the two breakevens.
- Between them, the share has not moved enough to pay for both fees, and you lose money.
- Outside them, you make money, with no limit on the right and a limit of forty-five on the left.
- The seller of a straddle would see the mirror image.

16 Example 7: a bull call spread

Illustration: buy call K=50 for $5, write call K=60 for $2

Net premium paid	5 − 2	**$3**
Share at 45	0 − 3	**−$3**
Share at 55	5 − 0 − 3	**+$2**
Share at 65 (profit capped)	15 − 5 − 3	**+$7**

IN THE LESSON

- One more combination, a spread.
- A bull call spread buys a call with a lower strike and writes a call with a higher strike.
- Here you buy a call at fifty for five dollars and write a call at sixty for two dollars.
- The net premium is five minus two, three dollars paid.
- If the share finishes at forty-five, both calls are abandoned and you lose the three.
- If it finishes at fifty-five, the long call pays five, the short call pays nothing, and the profit is five minus three, two dollars.
- If it finishes at sixty-five, the long call pays fifteen but you owe five on the short call, a net payoff of ten, so the profit is seven.
- Above sixty the gain stops growing.
- The spread is cheaper than a lone call, but it caps the profit.

17 Splits and dividends: what is adjusted

- Adjusted: stock splits and stock dividends
- Not adjusted: ordinary cash dividends
- Goal: strike × shares (total exercise cost) unchanged
- Exception: very large special dividends may be adjusted

IN THE LESSON

- Now to our third outcome.
- What happens to an exchange traded stock option when the company splits its shares or pays a dividend?
- The rule has two halves.
- Exchange traded options are adjusted for stock splits and for stock dividends, which are paid in extra shares.
- They are not adjusted for ordinary cash dividends.
- The goal of every adjustment is the same: leave the holder's total exercise cost, the strike multiplied by the number of shares, unchanged, so the contract keeps its economic meaning.
- There is one exception.
- A very large special cash dividend is sometimes adjusted for.
- But for an ordinary cash dividend, remember the simple instruction: do not touch the strike.

18 The split adjustment rule

Shares → shares × n/m
Strike → strike × m/n

n-for-m split	m old shares become n new
Shares covered	Multiply by n over m
Strike	Multiply by m over n
Total exercise cost	Strike × shares: unchanged
Cases	2-for-1, 3-for-2, 5-for-4

IN THE LESSON

- Here is the rule for an n for m split, where each m old shares become n new shares.
- The number of shares covered by the option is multiplied by n over m.
- The strike is multiplied by m over n, the reverse.
- Because one factor goes up while the other goes down by exactly the same ratio, the product, the total exercise cost, stays the same.
- A two for one split halves the strike and doubles the shares.
- A three for two split multiplies the shares by one and a half and the strike by two thirds.
- A stock dividend of twenty five per cent is treated like a five for four split, because every four shares receive one more.

19 Example 8: three adjustments

Illustration: each call starts on 100 shares

2-for-1 split, strike 60	shares ×2, strike ×1/2	**200 at $30**
3-for-2 split, strike 60	shares ×3/2, strike ×2/3	**150 at $40**
25% stock div., strike 40	5-for-4: ×5/4, strike ×4/5	**125 at $32**
Cost before = after	60×100 = 30×200 = 40×150	**$6,000**
Stock dividend check	40×100 = 32×125	**$4,000**

IN THE LESSON

- Let us apply the rule to three calls, each on one hundred shares.
- These are illustrations.
- First, a call with a strike of sixty and a two for one split.
- Shares double to two hundred, the strike halves to thirty.
- Second, the same call with a three for two split.
- Shares become one hundred and fifty, and the strike becomes two thirds of sixty, forty.
- Third, a call with a strike of forty and a twenty five per cent stock dividend, treated as five for four.
- Shares become one hundred and twenty five, and the strike is four fifths of forty, thirty two.
- Now check the cost.
- Sixty times one hundred equals thirty times two hundred equals forty times one hundred and fifty, six thousand dollars.
- And forty times one hundred equals thirty two times one hundred and twenty five, four thousand.

20 Example 9: an ordinary cash dividend

Illustration: stock at $52, ordinary cash dividend $2, no adjustment

Stock on ex-dividend date	52 − 2 dividend	**$50**
Call K 50: intrinsic change	2 before, 0 after	**−$2**
Put K 55: intrinsic change	3 before, 5 after	**+$2**
Strike adjusted?	ordinary cash: no	**No**

IN THE LESSON

- Now the case with no adjustment.
- A stock trades at fifty-two dollars and is about to go ex dividend, paying an ordinary cash dividend of two dollars.
- On the ex dividend date the stock falls by about the dividend, to fifty.
- The options are not adjusted, so the strikes stay put.
- Take a call with a strike of fifty.
- Before, its intrinsic value was two dollars.
- After, it is zero.
- The call holder is hurt by two.
- Take a put with a strike of fifty five.
- Before, its intrinsic value was three dollars.
- After, it is five.
- The put holder gains two.
- So cash dividends hurt call holders and help put holders, and the contract terms do not change to compensate.

21 How exchange-traded options trade

- Standardized expiry, strike and size (100 shares)
- Market makers quote bid and ask, and earn the spread
- Clearing house sits between buyer and seller
- In the US: the Options Clearing Corporation

IN THE LESSON

- Our fourth outcome is about how exchange traded options actually trade.
- First, they are standardized.
- The exchange fixes the expiry dates, the strike prices and the contract size, which for United States stock options is one hundred shares.
- Standardization means everyone trades the same contracts, so they can be bought and sold easily.
- Second, they trade with market makers.
- A market maker quotes a bid, the price at which it will buy, and an ask, the higher price at which it will sell, and earns the difference, the spread, for always being ready to trade.
- Third, a clearing house stands between buyer and seller and guarantees performance.
- In the United States it is the Options Clearing Corporation.

22 Margin and commissions

- Buyers pay the premium in full and post no margin
- Uncovered writers post margin, adjusted daily
- Reason: the loss can far exceed the premium received
- Brokers charge commissions on trading and on exercise

IN THE LESSON

- Who has to post margin, and why?
- A buyer pays the premium in full when the trade is made, and can lose no more than that, so a buyer posts no margin.
- A writer of an uncovered option is different.
- The writer received a small premium but may owe a large amount, so the writer must post margin, a deposit that protects the clearing house.
- Because the risk moves with the market, the margin is adjusted daily.
- A covered writer, who holds the shares, has less to fear.
- Finally, brokers charge commissions, both for trading an option and for exercising it.
- These costs reduce profit and are one reason that exercising is not always the best choice.

23 The exercise procedure

- First: holder tells the broker to exercise
- Second: broker notifies the clearing house
- Third: clearing house picks a short member at random
- Fourth: member assigns a writer; trade at strike

IN THE LESSON

- What happens when a holder decides to exercise?
- The steps are always the same.
- First, the holder tells the broker.
- Second, the broker notifies the clearing house.
- Third, the clearing house randomly selects a member that has a short position in the same option.
- Fourth, that member assigns the exercise to one of its customers who has written that option, and the shares change hands at the strike.
- Notice that the holder never deals with a particular writer.
- The clearing house stands in the middle, which is why a buyer does not worry about the writer's credit.
- Notice also that a writer cannot choose to avoid it.
- Once assigned, the writer must deliver or buy at the strike, and may be assigned at any time on an American option.

24 Example 10: open interest versus volume

Illustration: a new series starts with open interest of 0

Mon: Ann buys 10 from Bob	both open: volume 10	**OI 10**
Tue: Cy buys 6 from Ann	Ann closes, Cy opens: vol 6	**OI 10**
Wed: Ann sells 4 to Bob	both close: volume 4	**OI 6**
Volume over three days	10 + 6 + 4	**20**

IN THE LESSON

- Two statistics are easily confused.
- Volume counts contracts traded during a period.
- Open interest counts contracts currently outstanding.
- Follow a new option series over three days.
- These are illustrations.
- On Monday, Ann buys ten contracts from Bob, and both are opening new positions.
- Volume is ten and open interest is ten.
- On Tuesday, Cy buys six contracts from Ann.
- Ann is closing six, Cy is opening six, so the volume is six but the open interest stays at ten.
- On Wednesday, Ann sells her last four to Bob, who is closing part of his short.
- Both close, so the volume is four, and the open interest falls to six.
- Total volume over the three days is ten plus six plus four, twenty.

25 Example 11: exercise or sell?

Illustration: call, strike $50, share at $56

Option trades at	market price	**$8**
Intrinsic value	56 − 50	**$6**
Time value	8 − 6	**$2**
Selling beats exercising by	8 − 6 per share	**$2**

IN THE LESSON

- Does a holder with time value left do better exercising or selling?
- Take a call with a strike of fifty, with the share at fifty-six.
- These are illustrations.
- Suppose the option trades in the market at eight dollars.
- Its intrinsic value is fifty-six minus fifty, six dollars.
- Its time value is the price minus the intrinsic value, eight minus six, two dollars.
- If you exercise, you capture only the intrinsic value, six dollars, and you pay a commission.
- If you sell the option, you receive the full eight dollars.
- So selling beats exercising by two dollars per share, before commissions.
- That is why a holder with time value left usually sells, and exercises early only for special reasons.

26 Employee options, warrants and dilution

- Employee options: company-granted calls, at the money
- Vesting, long life, no selling: early exercise common
- Unvested options lost if the employee leaves
- Warrants: calls issued by the company itself
- Exercise creates new shares: existing holders diluted

IN THE LESSON

- Our last outcome moves from exchange traded options to options that companies create.
- Employee stock options are call options a company grants to its staff, usually struck at the money on the grant date.
- They come with a vesting period, a long life, and no right to sell or transfer them.
- Unvested options are normally forfeited if the employee leaves.
- Because the holder cannot hedge or sell, early exercise is common.
- Warrants are call options issued by the company itself, often alongside bonds.
- Here is the key difference from exchange traded options.
- When employee options or warrants are exercised, the company issues new shares and receives the strike, so existing shareholders are diluted.

27 Example 12: dilution from warrants

Simplified illustration: $60M before, warrants at $40

Value before	1,000,000 × $60	**$60M**
Cash from exercise	100,000 × $40	**$4M**
Shares after	1,000,000 + 100,000	**1,100,000**
Value per share after	$64M ÷ 1.1M	**$58.18**
Dilution per share	60 − 58.18	**$1.82**

IN THE LESSON

- Let us see dilution in numbers.
- These are illustrations.
- A company has one million shares worth sixty dollars each, so its equity is worth sixty million dollars.
- It has one hundred thousand warrants with a strike of forty.
- The holders exercise.
- The company receives one hundred thousand times forty, four million dollars in cash.
- It issues one hundred thousand new shares, so the share count rises to one million one hundred thousand.
- Total value is now sixty four million, and dividing by one million one hundred thousand gives fifty-eight dollars and eighteen cents per share.
- Existing shareholders lose one dollar and eighty-two cents per share.
- The warrant holders were paid out of the existing owners' pockets.

28 Example 13: a convertible bond

Illustration: face value $1,000, conversion ratio 20

Conversion price	1,000 ÷ 20	**$50**
Value, share at 60	20 × 60	**$1,200**
Value, share at 40	20 × 40	**$800**
Convertible = bond + call	so the coupon is lower	**Lower coupon**
Issuer call right	can force conversion	**Forced**

IN THE LESSON

- A convertible bond is a bond the holder can exchange for a fixed number of shares, the conversion ratio.
- Take a bond with a face value of one thousand dollars and a conversion ratio of twenty.
- The conversion price is face value divided by the ratio, one thousand over twenty, fifty dollars per share.
- The conversion value is the ratio times the share price.
- With the share at sixty, conversion value is twenty times sixty, twelve hundred dollars, more than the face value, so converting is attractive.
- With the share at forty, it is twenty times forty, eight hundred, so the holder keeps the bond.
- A convertible is a bond plus a call option, so it carries a lower coupon, and the issuer's own call right can force conversion.

29 Four mistakes to avoid

- Call rule on a put: a put is in the money if S < K
- Forgot premium or ×100: net it out, then scale up
- Adjusted for cash dividend: only splits, stock divs do
- Exercised with time value left: sell instead

IN THE LESSON

- Four common errors.
- Mistake one: applying the call rule to a put.
- A call is in the money when the share price is above the strike, a put when it is below, and the payoffs are the share price minus the strike for a call, and the strike minus the share price for a put.
- Mistake two: forgetting the premium or the multipliers.
- Subtract the premium from the buyer's payoff, then multiply by one hundred shares and by the number of contracts.
- Mistake three: adjusting the strike for an ordinary cash dividend.
- Only splits and stock dividends adjust the terms, and the total exercise cost stays fixed.
- Mistake four: exercising when time value is left.
- Selling the option captures it, so exercising is usually the worse choice.

30 Recap: the main ideas

- Call = right to buy, put = right to sell; writer bound
- Profit = payoff − premium; BE = K+P call, K−P put
- Splits adjust terms, cost unchanged; cash divs do not
- Clearing house guarantees; writers post margin
- Warrants dilute; convertible = bond + call option

IN THE LESSON

- Let us pull it together.
- A call is a right to buy at the strike and a put a right to sell, with the writer holding the obligation.
- A call is in the money when the share price is above the strike, a put when it is below.
- Profit is the payoff minus the premium for a buyer, with breakeven at the strike plus the premium for a call and the strike minus the premium for a put.
- Writers mirror buyers, and combinations add their legs.
- Splits and stock dividends adjust the terms and leave the exercise cost unchanged, while ordinary cash dividends do not.
- The clearing house guarantees trades, and writers post margin.
- Company options dilute shareholders, and a convertible is a bond plus a call.

31 Try three quick questions

1. Put, K 80, premium 5, share ends at 72. Profit?
   Answer: Payoff 8, profit 8 − 5 = $3 per share.
2. Call on 100 shares at 90, 3-for-2 split. New terms?
   Answer: 150 shares at 90 × 2/3 = $60.
3. Write one put, K 40, premium 4. Max loss?
   Answer: (40 − 4) × 100 = $3,600.

IN THE LESSON

- Now try three quick questions yourself.
- Pause after each one.
- Question one.
- You buy a put with a strike of eighty for a premium of five per share, and the share finishes at seventy-two.
- What is your profit per share?
- Question two.
- A call covers one hundred shares at a strike of ninety.
- The company announces a three for two stock split.
- What are the new terms?
- Question three.
- You write one contract of a put with a strike of forty and receive a premium of four per share.
- What is the most you can lose in dollars?
- Take a moment, then check your answers on the board.