

Topic 1: Strategy overview	3
Construction	3
Limited profits, low cost.....	3
Volatility	4
Time decay	4
Topic 2: Profits, losses and breakeven	5
Maximum profit, maximum loss, breakeven	5
Calculating your profit/loss at expiry.....	5
Before expiry	6
Topic 3: Benefits, risks and other features.....	7
Call spread vs. taken call	7
Early exercise	7
No margins	7
Trading costs	8
Topic 4: Follow-up action.....	9
At expiry.....	9
Before expiry	9
What if the written call is exercised?	10
Topic 5: The bull put spread	11
Maximum profit, maximum loss, breakeven	11
Outcomes at expiry	11
Why use puts?	12
Disadvantages of the bull put spread	12
Summary.....	13

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Topic 1: Strategy overview

Option traders are familiar with the taken call strategy.

For the bullish trader, the taken call offers potentially unlimited profits, while the maximum loss is the premium paid.

But what if you think the stock's price will rise only moderately?

Is there a better strategy?

Construction

The bull spread offers a way of gaining exposure to a moderate rise in the share price but for a lower cost than the taken call.

The strategy involves the purchase of one call option and the sale of another call with a higher strike price and the same expiry.

The spread is typically entered with the share price around the strike price of the bought option.

Example

With XYZ shares at \$10.00, you enter the following strategy:

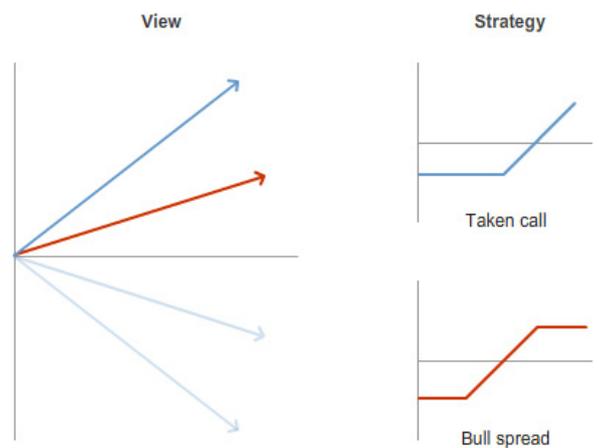
- Take one XYZ 1000 call @ \$0.31
- Write one XYZ 1025 call @ \$0.19.

Limited profits, low cost

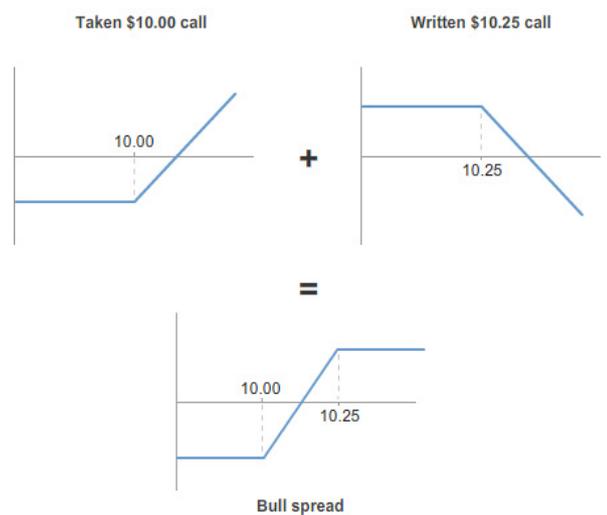
The sale of the higher strike call means your potential profits are limited.

However, the premium you receive for writing the call offsets the cost of the taken call. In our example, the net cost of the strategy is \$0.12. This is the most you can lose.

Unlike the taken call, your upside is capped. The advantage is the strategy will cost you less.



**These diagrams are conceptual in nature and not drawn exactly to scale.*



Volatility

The two legs of the bull spread will react differently to a change in volatility. An increase in volatility will benefit the taken call, but hurt the written call.

The impact of volatility movements on one leg tends to be neutralised by the impact on the other leg.

Consequently, a significant change in volatility does not affect the spread in the same way that it benefits or hurts the outright taken call.

Your outlook on volatility is therefore not a significant consideration.

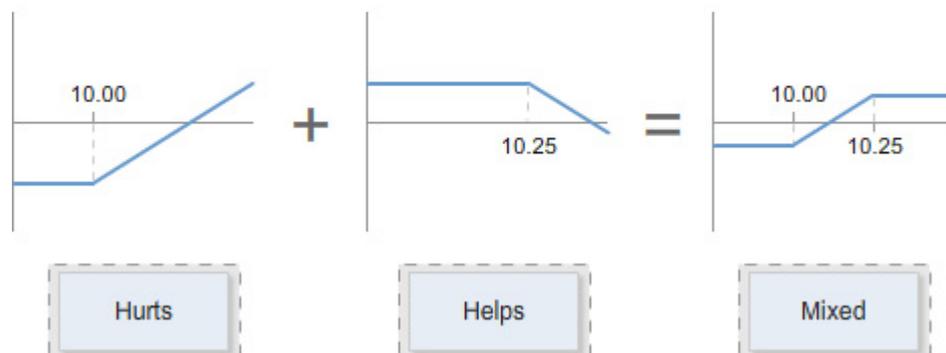
Strategy	Price outlook	Volatility outlook
Taken call	Strongly bullish	Increase
Bull spread	Moderately bullish	Irrelevant

Time decay

Time decay has a mixed effect on the bull spread. It hurts the taken option, and helps the written option.

Because time decay benefits one leg and hurts the other, its overall effect on the bull spread is less severe than on the taken call.

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Topic 2: Profits, losses and breakeven

Maximum profit, maximum loss, breakeven

Your maximum loss is the net cost of the spread: the premium you pay for the taken call, less the premium you receive for the written call.

Your maximum profit is the difference between the strikes of the two options, less the cost of the strategy.

The breakeven point is the lower strike plus the net cost of the strategy.

Calculating your profit/loss at expiry

Your profit or loss at expiry will be the value of the spread less the cost of the strategy.

The value of the spread at expiry is simply the value of the taken call less the value of the written call.

Scenario 1: Share price below lower strike

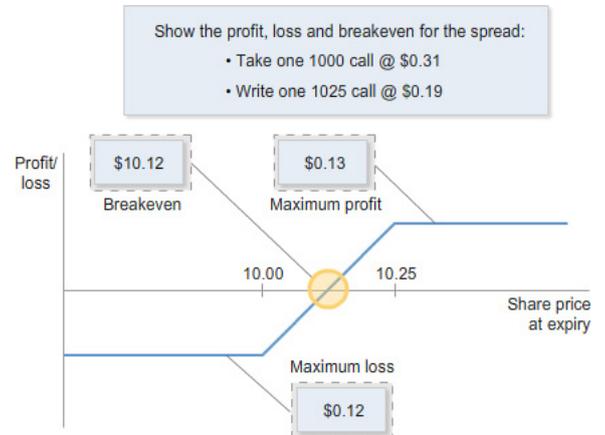
If the share price at expiry is below the strike of the taken call, the spread will be worth nothing, as both options will expire worthless. You will make the maximum possible loss, the net cost of the strategy.

Scenario 2: Share price between strikes

If the share price at expiry is between the strikes of the two calls, you may make either a profit or a loss. Your result depends on how high the share price has risen.

The written call is out of the money and will expire worthless, while the taken call is in the money and will be worth intrinsic value. The value of the spread is therefore the same as the value of the call.

Your profit/loss will be the value of the call less the cost of the spread.



At expiry

Share price	9.85	9.95
Taken 1000 call	0.00	0.00
Written 1025 call	0.00	0.00
Spread value	0.00	0.00
Spread cost	0.12	0.12
Profit/loss	(0.12)	(0.12)



At expiry

Share price	9.85	9.95	10.10	10.20
Taken 1000 call	0.00	0.00	0.10	0.20
Written 1025 call	0.00	0.00	0.00	0.00
Spread value	0.00	0.00	0.10	0.20
Spread cost	0.12	0.12	0.12	0.12
Profit/loss	(0.12)	(0.12)	(0.02)	0.08

Scenario 3: Share price above upper strike

If the share price at expiry is above the strike of the written call, you will make the maximum profit. This is the difference between the strikes less the cost of the spread.

Your profit remains the same no matter how far the share price has risen. For every cent the share price has risen, the increase in value of your taken call is offset by the increase in value of the written call.

Before expiry

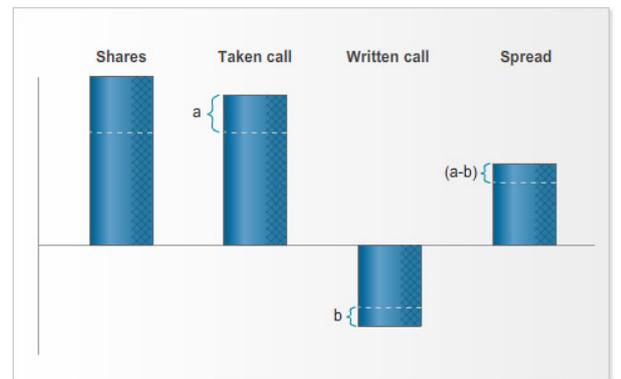
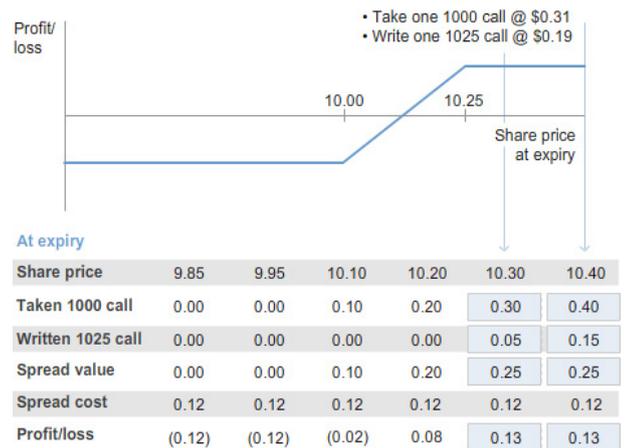
You don't have to wait until expiry to exit your position - you can close out the spread on market at any time.

It is not possible in advance to know what your spread will be worth prior to expiry, but if the share price rises, both calls should increase in value.

The taken call should rise in value by more than the written call, due to the difference in the deltas of the two options. The net effect is that the spread increases in value.

The taken call in our example might have a delta around 0.55, and the written call a delta of around 0.4, giving a position delta of 0.15.

For a \$0.10 rise in the stock price, the spread should rise in value by about \$0.015.



Topic 3: Benefits, risks and other features

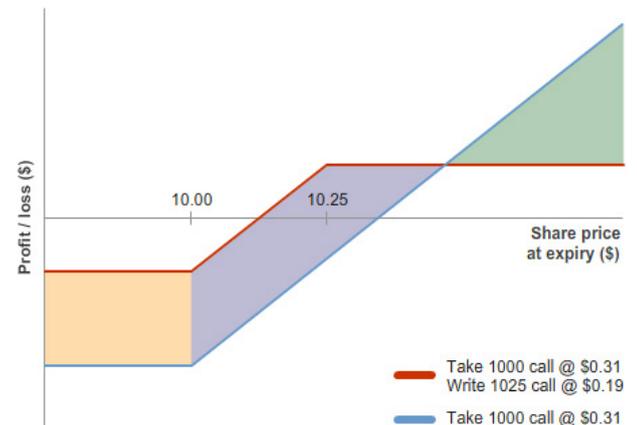
Call spread vs. taken call

The main benefit of the bull spread compared to the taken call is the lower cost.

If your bullish view turns out to be incorrect, you will lose less than had you bought the call.

The trade-off for this is that your profits are capped. If the share price rises strongly you will make less from the call spread than from the taken call.

The spread produces a better result than the taken call if the share price falls or rises moderately.



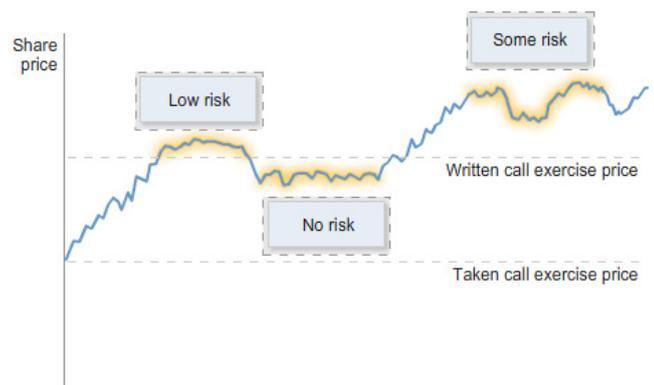
Early exercise

If the share price rises only moderately, there is a low risk of early exercise, as the written option will generally be out of, or around, the money.

However, if the stock price rises well above the strike price of the written call, the risk of early exercise increases.

Early exercise is more an inconvenience than a major concern. If your written call is exercised, you can always exercise your taken call to buy the shares you must deliver on the written option.

This involves a degree of administration, which will be coordinated by your broker.



No margins

You do not have to pay margins on a bull call spread.

Although the strategy includes a written option, your risk is limited.

The most you can lose is the cost of the spread, which you pay at the time you enter the position.

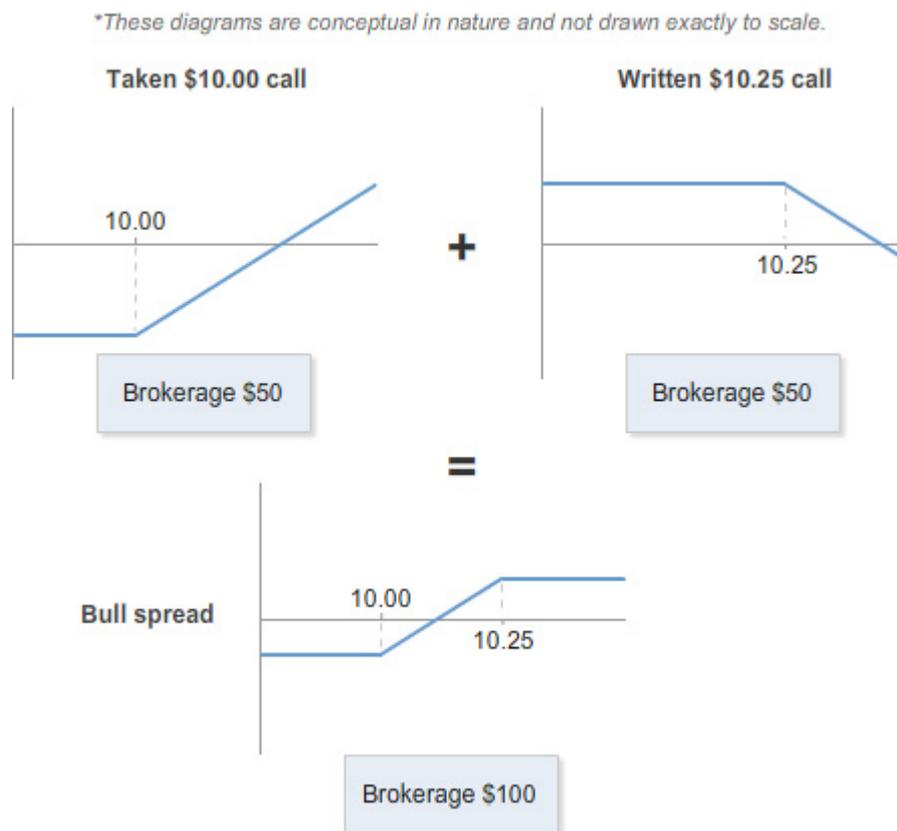
Risk	Margins payable	Strategy
Limited	No	Call spread
Unlimited	Yes	Written call

Trading costs

The spread can be costly in terms of brokerage.

If your broker charges 'per trade', you will pay brokerage on each leg when you enter the strategy. You will also be charged brokerage on each leg you close out.

As the spread is a strategy offering limited profit potential, it is particularly important to factor brokerage into your calculations. If you are trading a small number of contracts, costs can significantly reduce your profits.



Assume your broker charges \$50 brokerage per trade.

Topic 4: Follow-up action

At expiry

You will need to take action on any legs that are in the money at expiry.

If the share price is above the strike price of the written call, you will need to close out both the taken and written calls. If you do not close out the written call, it will be exercised.

If the share price is between the two strikes, the written call will expire worthless. You will need to sell the taken call. Alternatively, if you want to buy the underlying stock, you could exercise the call.

If the share price is below the strike price of the bought call, you need take no action, as both options will expire worthless.

Share price at expiry	Taken 1000 call		Written 1025 call	
	Close out?		Close out?	
	No	Yes	No	Yes
\$9.80	✓	✗	✓	✗
\$10.15	✗	✓	✓	✗
\$10.30	✗	✓	✗	✓

Before expiry

You can exit your position at any time prior to expiry.

Stock stays steady or falls

If the stock does not produce the price movement you expected, the spread will lose value as time passes. It may be wise to reassess your original view.

If you maintain your moderately bullish view, you can leave the strategy in place.

If your view on the stock has changed, you could consider taking the strategy off while the taken call still has some time value. The longer the stock price stays steady, the more time decay will damage your position.

Stock rises

If the stock price rises more strongly than expected, it is generally advisable to close out your position early.

Once the share price is well above the strike price of the written call, there is little to be gained by holding your position any longer.

The share price has not risen as you expected. Identify the outcome for your bull spread if you were to either close out or maintain your position, given two subsequent price scenarios.

	Subsequent share price movement	
	Falls or remains steady	Recovers
Close out	Minimise loss	Miss out on profit
Hold position	Increased loss	Return to profit

The share price has risen well above the strike of the written call. Identify the outcome for your bull spread if you were to either close out or maintain your position, given two subsequent price scenarios.

	Subsequent share price movement	
	Remains strong	Falls back
Close out	Profit	Profit
Hold position	Profit	Possible loss/ reduced profit

The spread will be worth close to its maximum possible value, so you may be able to exit the position with close to the maximum possible profit without waiting until expiry.

A second benefit of taking the strategy off early is that the risk of early exercise is removed.

What if the written call is exercised?

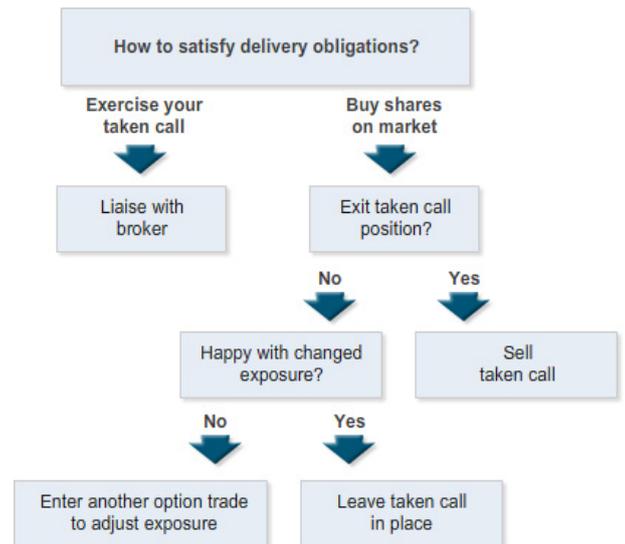
You must deliver the underlying shares if your written call is exercised. Assuming you do not already hold these shares, you can:

- buy them on market, or
- exercise your taken call.

If you buy the shares on market, you must decide what to do with your taken call. Your choice is:

- sell the call
- leave it in place, giving you exposure to a further rise in the share price, or
- create a new position by adding another option leg.

Your action will usually depend on your outlook on the stock.



Topic 5: The bull put spread

The bull spread can also be constructed using put options.

As is the case with the bull call spread, you buy the lower strike option and write the higher strike option.

The strategy reflects the same outlook on the stock as the call spread, and offers the same limited loss, limited profit exposure.

Example

With XYZ shares at \$10.00, you enter the following strategy:

- Take one XYZ 1000 put @ \$0.26
- Write one XYZ 1025 put @ \$0.40.

Maximum profit, maximum loss, breakeven

Your maximum profit is the amount you receive for the strategy: the premium you get for the written put, less the premium you pay for the taken put.

Your maximum loss is the difference between the strike prices of the two options, less the amount you receive for the strategy.

The breakeven point is the upper strike price less the amount you receive for the strategy.

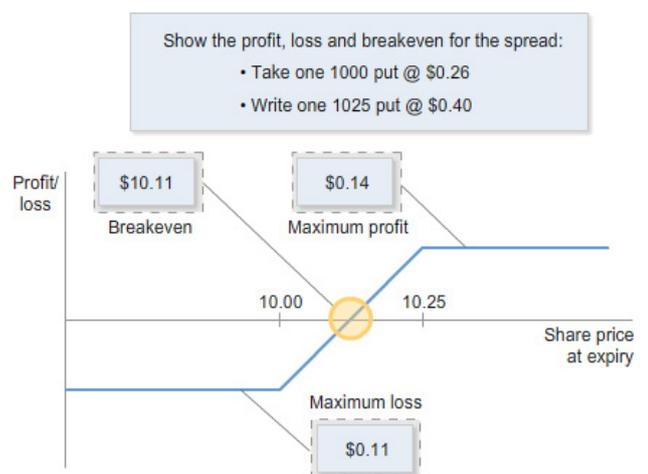
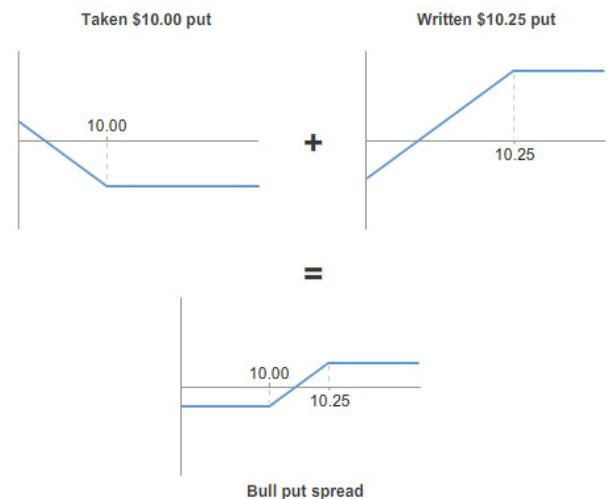
Outcomes at expiry

If the share price at expiry is above the strike of the written put, both options expire worthless and you make your maximum profit.

If the share price is below the strike of the taken put, both options are in the money and should be closed out. You make your maximum loss.

If the share price is between the two strikes, you must close out the written put to avoid exercise. Your taken put will expire worthless.

**These diagrams are conceptual in nature and not drawn exactly to scale.*
Bull put spread



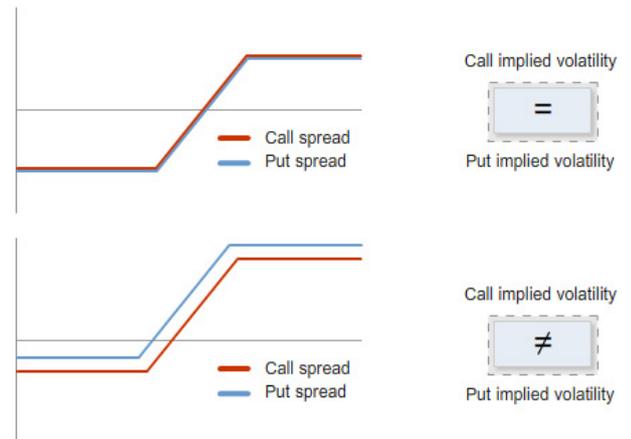
Share price at expiry	Spread	
	Taken 1000 put	Written 1025 put
\$9.80	✓	✓
\$10.15	✗	✓
\$10.30	✗	✗

Why use puts?

If calls and puts are trading with similar implied volatilities, the bull call spread and the bull put spread should offer similar profit and loss potential.

If, however, there is a mismatch between volatility levels of the relevant calls and puts, one method of construction may offer a pricing advantage over the other. While this is not common, it is always worth checking.

One advantage of the bull put spread, if at expiry the share price is above the upper strike price, is that you need not close out either option. Both will expire worthless.



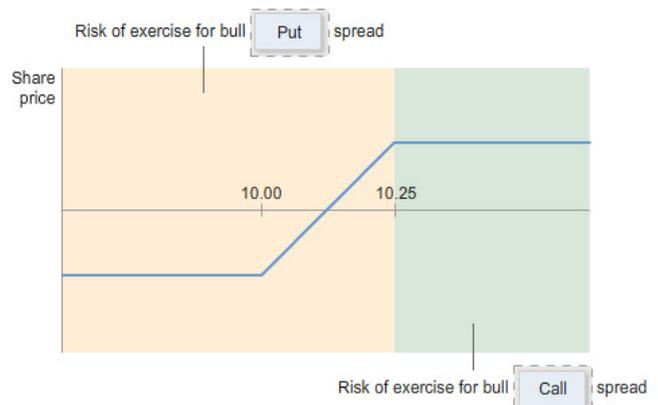
Disadvantages of the bull put spread

Risk of exercise

There is a higher risk of early exercise if you construct the bull spread with puts.

The higher risk is due to two factors:

- The written option is already well in the money at the time the position is opened.
- Puts are more likely than calls to be exercised early, as exercising a put allows the investor to earn interest on the proceeds from the sale of the stock.



Only if the share price rises above the upper strike is there no risk of early exercise.

Margins

The bull put spread is called a credit spread. The option you are selling is worth more than the option you are buying, so the spread is placed for a net credit.

Because of this, the bull put spread involves the payment of margins.

The bull call spread, in contrast, is a 'debit spread', in which your maximum loss is the premium you pay at the time of entering the strategy. No margins are payable.

	Options used to construct bull spread			
	Calls		Puts	
Spread type	<input checked="" type="checkbox"/> Debit	<input type="checkbox"/> Credit	<input type="checkbox"/> Debit	<input checked="" type="checkbox"/> Credit
Margins payable?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Profit potential	<input checked="" type="checkbox"/> Limited	<input type="checkbox"/> Unlimited	<input checked="" type="checkbox"/> Limited	<input type="checkbox"/> Unlimited
Loss potential	<input checked="" type="checkbox"/> Limited	<input type="checkbox"/> Unlimited	<input checked="" type="checkbox"/> Limited	<input type="checkbox"/> Unlimited
Risk of exercise if stock price above or below upper strike?	<input checked="" type="checkbox"/> Above	<input type="checkbox"/> Below	<input type="checkbox"/> Above	<input checked="" type="checkbox"/> Below

Summary

- The bull spread reflects a moderately bullish view on the underlying shares.
- It involves the purchase of one call option and the sale of another call with a higher strike price, and the same expiry.
- The sale of the higher strike call means that, unlike the taken call, your potential profits are limited. The advantage is the strategy will cost you less.
- You do not have to pay margins on the bull call spread.
- At expiry, you will need to take action on any legs that are in the money.
- The bull spread can also be constructed using put options.
- You buy the lower strike put and write the higher strike put.
- The bull call spread and the bull put spread usually offer similar profit and loss potential. However, it is worth checking whether one method of construction offers a pricing advantage.
- There is a higher risk of early exercise if you construct the bull spread with puts.
- The bull put spread involves the payment of margins.

Practical examples of option strategies are given throughout these modules.

Prices used in the examples were calculated using an option pricing model, and are based on the following, unless otherwise specified:

- Underlying stock price: \$10.00
- Volatility: 25%
- Risk free interest rate: 5%
- Days to expiry: 30
- The stock does not go ex-dividend during the life of the option
- American exercise style

Brokerage costs are not included in the examples. It is, however, important to take brokerage costs into account when trading options.

Please note that some payoff diagrams that appear in this course are conceptual in nature, and may not be drawn exactly to scale.