



# Options

Understanding options strategies



**ASX**  
AUSTRALIAN STOCK EXCHANGE



# FSR

## TERMINOLOGY CHANGES

ASX has changed its business framework for trading, clearing and settlement. As a result there have been changes to the terminology used in this document.

OLD TERM	NEW TERM
Options Clearing House Pty Ltd	Australian Clearing House Pty Ltd
OCH	ACH
ASXF Pty Ltd	ASX
ASX Futures Exchange	
ASXF Exchange	
ASX Business Rules	
SCH Business Rules	ASX Market Rules
OCH Business Rules	ASTC Settlement Rules
OCH Derivatives Clearing Rules	ACH Clearing Rules
OCH Clearing Rules	
ASXF Exchange Business Rules	
ASXF Business Rules	ASX Market Rules
Broker	ASX Market Participant or Market Participant (may also be a ACH Clearing Participant and/or ASTC Settlement Participant)
ASX PO	Market Participant / Trading Participant (may also be a ACH Clearing Participant and/or ASTC Settlement Participant)
Participating Organisation	
RIOT	ASX Market Participant or Market Participant (Trading Participant only for selected products) and Market Maker
Non-Broker Participant (NBP)	General Settlement Participant
Limited Purpose NBP	Specialist Settlement Participant
NSSP	Account Participant
Non sponsoring settlement participant	
Security	Financial Product (except for overseas products)
Securities	
Shares	
Derivative	
DTF or Derivatives Trading Facility	DTP or Derivatives Trading Platform
Clearing Participant Only (currently derivatives only)	Direct Clearing Participant
Third Party Clearer	General Clearing Participant
Non-CHESS Approved Security	Non-CS Approved Product
Foreign Portal Dealer	Overseas Portal Dealer
Participating ASX Security	Participating ASX Traded Product
Participating Foreign Security	Participating International Financial Product
Participating Foreign Exchange	Participating Overseas Exchange

For further details of the Financial Services Reform terminology changes, please visit [www.asx.com.au/fsr.htm](http://www.asx.com.au/fsr.htm).

# Contents

---

Introduction	2
Option profiles	3
Covered write	4
Protected covered write	6
Stock repair strategy	8
Bull spread	10
Bear spread	12
Long straddle	14
Short straddle	16
Long strangle	18
Short strangle	20
Ratio call spread	22
Calendar spread	24
Long butterfly	26
Synthetics	28
Glossary of terms	31
Further information	32

Derivatives  
Division  
1800 028 585

# Introduction

ASX runs several classes on options, ranging from an introductory class through to an advanced Options Trading Workshop. Intermediate level classes show you how to earn extra income using options, and how to profit from market movements. There are also several options classes available online.

To find out more about ASX's options classes, visit [www.asx.com.au/education](http://www.asx.com.au/education)

Exchange traded options first began trading in the United States in 1973. Since this time, option markets worldwide have grown exponentially in size. This growth is largely due to the great flexibility options provide to the investor, a flexibility not available through share investment alone.

Some of the key uses for options are leverage, earning extra income, protecting the value of equity positions, limiting risk and as an alternative to direct investment in the share market.

So, how can you get the most out of options? The answer is by adopting the appropriate trading strategy which suits your personal circumstances and market view. Strategies can involve combining a share investment with bought and sold calls and/or puts within the same class. There are strategies that can be used by investors with bullish, bearish or neutral views of the market, and these strategies can be designed to reflect how bullish or bearish the investor is.

Options trade not just in the dimension of price, but also in the dimensions of time and volatility. Option strategies can be tailored to suit an investor's view on moments in all of these dimensions. The key word is flexibility.

With that in mind, this booklet outlines some of the different strategies available. In a booklet such as this it is not possible to examine every strategy that may be used on the Options Market, rather, this booklet analyses those most commonly used. Each strategy is evaluated by explaining its various components, optimal market conditions for use, and your alternatives when conditions change mid-class.

With that in mind, this booklet outlines some of the different strategies available. In a booklet such as this it is not possible to examine every strategy that may be used on the Options Market, rather, this booklet analyses those most commonly used. Each strategy is evaluated by explaining its various components, optimal market conditions for use, and your alternatives when conditions change mid-class.

Option transactions should be entered into only by investors who fully understand the nature and extent of their rights and obligations and are aware of the risks involved. This booklet is designed to be read by investors experienced in trading options and who now require more information on how options can be used. It is assumed that readers of this booklet are familiar with option pricing fundamentals, and the concepts of delta and time decay.

Investors who have not yet traded in the market or who do not have a thorough understanding of the features of call and put options should not attempt any of the strategies in this booklet. ASX Derivatives recommends the strategies outlined in this booklet be only entered into by investors under the guidance of a stock broker.

For the purpose of simplicity, transaction costs, tax considerations and the cost of funding have been omitted from examples in this booklet. These factors, as well as market liquidity, can affect a strategy's outcome. We recommend you check these particulars with your broker before entering into a transaction. Option premiums used in examples in this booklet are theoretically reasonable, however, may not exist in reality.

Investors who propose to deal in options traded on the Options Market operated by ASX Derivatives must read the explanatory booklet entitled Understanding Options Trading before undertaking any option transactions.

# Option profiles

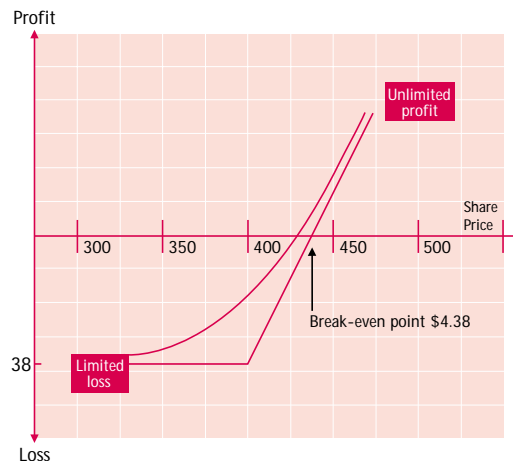
To explain option strategies as simply as possible, each strategy description is accompanied by a graph called an option pay-off diagram or profile. These graphs show the profit and loss situations for a particular strategy at a range of share prices at expiry. They do not take into account commissions or other transaction costs.

An example will help. The diagram on the right shows an AML March \$4.00 call option purchased for 38 cents. At expiry, if the share price is anywhere below \$4.00 the option will be worthless. The break-even point is \$4.38 and if the share price is above the breakeven point the strategy will be profitable.

The curved line is the time line. The time line gives an approximation of the value of the option at various stages throughout the life of the option. The time line moves closer to the pay-off line as the expiry date approaches. The time line also indicates if a strategy will benefit from time decay or if it will lose from it. If the time line is below the pay-off line then time decay will benefit the strategy. If it is above the pay-off line then time decay will cause the strategy to lose value. Time decay may also have a mixed impact on the value of a particular strategy depending on where the share price is at a particular point in time.

Further explanations of pay-off diagrams for sold calls and bought and sold puts are available in the Understanding Options Trading booklet, copies of which are available from ASX Derivatives or your stock broker.

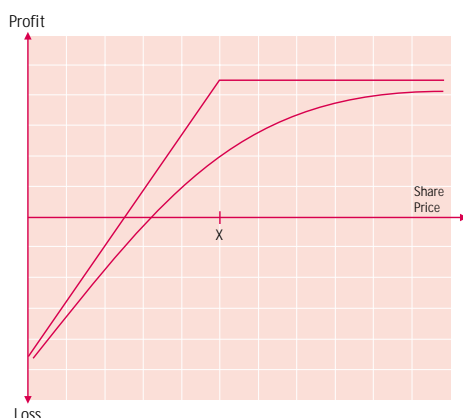
AML \$4.00 March Call Option



Derivatives  
Division  
1800 028 585

# Covered write

Covered write	
Construction	long stock, short call X
Point of entry	market usually around X, but can vary
Break-even point (at expiry)	share price at time of writing option less premium earned
Maximum profit (at expiry)	Time value component of option premium plus the difference between strike price & share price if option is out-of-the-money when written
Maximum loss (at expiry)	Share price at time of writing option less premium received
Time decay	helps
Margins to be paid?	no
Synthetic equivalent	short put X



## When to use the covered write

Market outlook	neutral
Volatility outlook	steady/falling

When share prices are expected to remain flat, the covered write can be used to generate income, while also providing some protection against an unexpected fall in the market.

## Profits and losses

The maximum profit possible from the at-the-money covered write is the premium earned for writing the option. This will be earned if at expiry the share price is at, or above the share price of the call option sold.

The potential loss with this strategy is unlimited, since the investor holds the stock. Any fall in the share price will result in unrealised losses. However, since the short call will be worthless at expiry if the share price falls below the exercise price of the option, the premium earned on the sale of the option provides some protection from the decline in value of the shares.

Although an unexpectedly strong rise in the share price will not result in a physical loss, there is an 'opportunity cost'. This is because the investor will only receive the option premium and must forgo the increased value of the shares as they will be obliged to sell their shares at the exercise price of the option they have sold.

## Other considerations

- **Strike price:** when choosing which option to sell, the trader must balance the income to be earned against the possibility that the option will be exercised. Writing in-the-money calls will generate the most income and provide the greatest protection in the event of a market downturn.

However the possibility that the option will be exercised is high. Writing at-the-money options will earn the investor the most time value. The choice of strike price will largely depend on whether the investor's view is neutral leaning to bullish, or neutral leaning to bearish.

- Exercise: the writer of a call option must always remember that the stock can be exercised at any time. As a result, the investor must be content to lose the stock at that price.
- The buy and write: the buy and write is the simultaneous writing of calls and purchase of the same number of shares over which the options will be written. It represents a method of purchasing stock at levels below the current market price.
- Covered writing can also be done with stock bought on margin.

### Follow-up action

If the share price remains flat and volatility remains steady or falls, the position may be left open in order to take advantage of time decay.

If the share price unexpectedly strengthens, the trader may consider closing out the position and possibly rolling up to the next strike price. If expiry is approaching and the trader is concerned about unwanted exercise, the position could be closed out and rolled into the next expiry date, thereby avoiding exercise and potentially increasing the income flow.

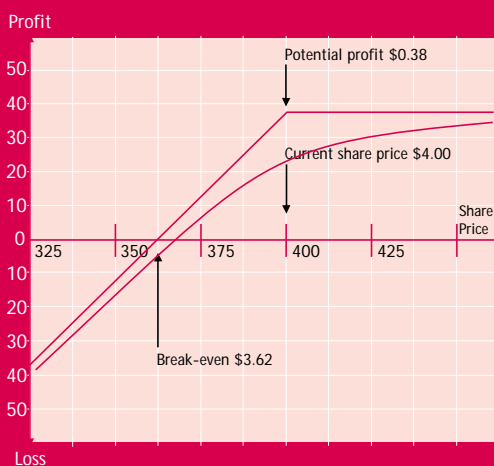
### Points to remember

- Do not use the covered write if you are concerned about being exercised.
- Be sure that you are happy with the price you will obtain for your shares if you are exercised.
- Given the possibility the options will be exercised, be sure that the premium received is adequate compensation.

### Example

XYZ shares have had a run up to \$4.00 over the last six months. You believe that the market is quietening down and the stock will remain at these levels over the next three months. In order to gain some income during this time you decide to write call options over your existing holdings. It is now September.

### Sell 1 Dec \$4.00 Call @ \$0.38



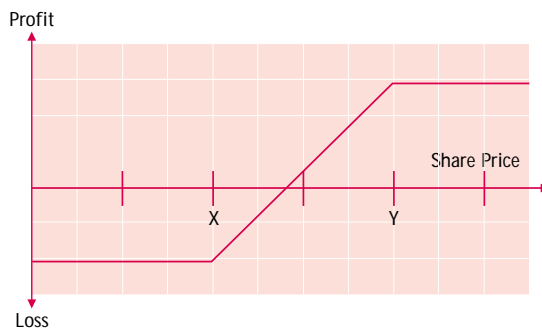
# Protected covered write

Protected covered write	
Construction	long put X, short call Y, long stock
Point of entry	stock price between the two strike prices
Break-even (at expiry)	cost of stock plus net cost of options
Maximum profit (at expiry)	difference between cost of stock and exercise price of the call, plus/minus the net credit/debit of the options
Maximum loss (at expiry)	difference between cost of the stock and the exercise price of the put plus the net cost of the options
Margins to be paid?	no

Derivatives  
Division  
1800 028 585

6

When share prices are expected to rise moderately, the protected covered write can be used to generate income, while eliminating the risk of a large potential loss on the stock.



Market outlook      moderately bullish

## Profits and losses

The maximum profit at expiry is the difference between the cost of the stock and the strike of the call. To this we add any credit or subtract any debit from the sale of the call and purchase of the put. If the premium from the sale of the call options exceeds the cost of buying the put then the maximum profit is increased by the net credit.

The maximum loss occurs if the stock falls to the level of the put. The loss is equal to the difference between the cost of the stock and the level at which the stock can be sold through exercise of the put, plus the net cost of the options.

The potential loss with this strategy is limited because the stock can always be sold for the strike price of the put.

Although an unexpectedly strong rise in the share price will not result in a loss, there is an 'opportunity cost'. This is because the investor will be required to sell their shares at the exercise price of the call option.

## Other considerations

- **Strike price:** when choosing which option to sell, the trader must balance the income to be earned against the level at which they will be required to sell their shares. Similarly when choosing which put option to buy, the investor must balance the cost of the put with the level of protection required.



Typically investors sell out-of-the-money calls and buy out-of-the-money puts providing the opportunity to sell their shares for a profit and, at the same time, remove much of the risk. The protected buy and write/covered write is popular with investors buying stock on margin as much of the downside risk of owning the stock is eliminated through the purchase of the put. The strategy can be viewed as insuring the stock with a put financed either wholly or in part with the proceeds from the written call. Investors should be aware that stock bought on margin through certain margin lenders can be lodged with OCH as collateral for the written calls on a one for one basis.

### Follow-up action

In the event of getting exercised on the short call (stock is sold) only the put remains which should be sold as it is no longer required.

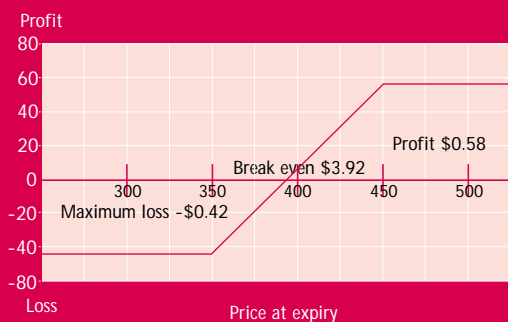
### Points to remember

- Be sure that you are happy with the price you will obtain for your shares if you are exercised.
- Given the possibility the options will be exercised, be sure that the premium received is adequate.

### Example

XYZ shares are trading at 4.00. In order to insure the stock at 3.50 you buy the 3.50 put. To pay for the put option you decide to write an out of the money 4.50 call option at 16 cents per share.

**Buy \$3.50 put @ 8 cents**  
**Sell \$4.50 call @ 16 cents**  
**Bought stock at \$4.00**

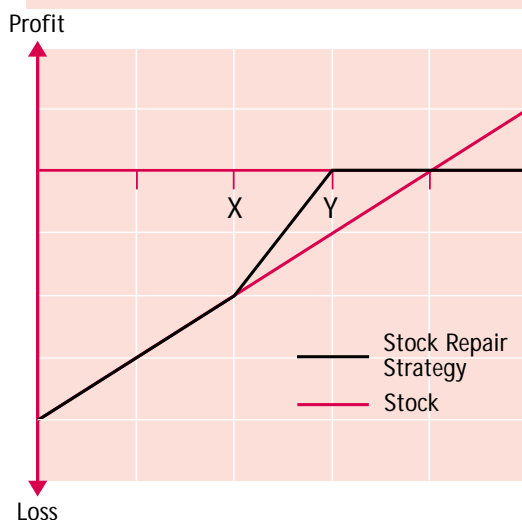


Derivatives  
 Division  
 1800 028 585

# Stock repair strategy

Stock repair	
Construction	long stock long call X, short calls Y
Point of entry	market around X
Break-even (at expiry)	occurs where stock closes at strike price of short calls
Maximum profit (at expiry)	N/A
Maximum loss (at expiry)	net cost of the ratio call spread if any
Margins to be paid?	no

A strategy designed to lower the breakeven price of the stock.



Market outlook mildly bullish

## Profits and losses

The stock repair strategy is designed to allow investors to break-even more quickly on a losing stock position. It does not involve investing more cash or increasing the risk of the position.

The strategy combines a losing stock position with a ratio call spread (see ratio call spread) where twice as many calls are sold as are bought. Unlike the ratio call spread the investor is not exposed to unlimited losses on any of the written calls. The written call options are covered either by the long stock position or by the bought calls. Ideally the spread is opened at no cost, or for a credit, with the premium received from the calls written at the higher strike price paying for the calls bought at the lower strike price.

If the stock at expiry is above the strike price of the sold calls the stock is sold at this level. The remaining option position is a bull call spread (see bull call spread) that achieves its maximum profit at this same price. Profits from the bull call spread and the partial recovery in the stock allow the investor to break-even at a lower price than if the client had simply continued to hold the stock.

## Follow up

If the share price at expiry is below the strike price of the sold options, these options will expire worthless, and the investor has only to close out the bought call to recover any intrinsic value.

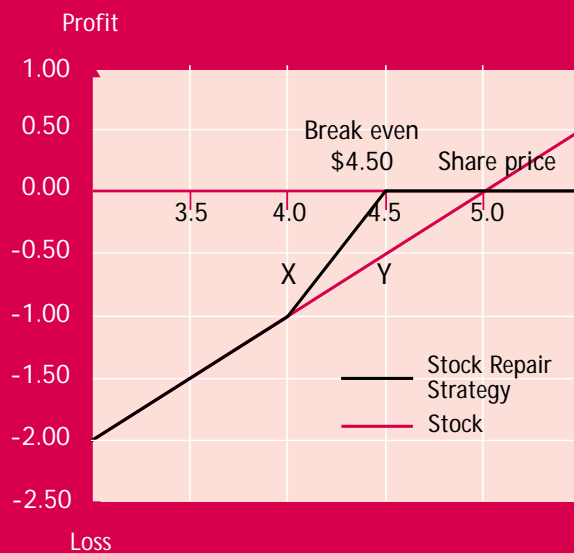
If the stock price is above the strike price of the sold calls, the investor will need to close out one or both of the written legs. The investor may allow one of the calls to be exercised if they wish to exit their stock position. The bought call will also need to be closed out to recover intrinsic value.

### Points to remember

- This strategy is suitable if your investment goal is to break-even and sell the stock
- This strategy benefits from a small upward movement in the market. It should not be used if a strong upward movement is expected.
- If the stock continues to fall the strategy does nothing to alleviate further losses on the stock.

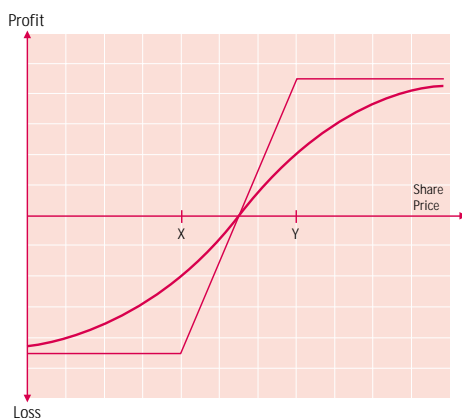
### Example

Buy one \$4.00 call @ 30 cents  
Sell two \$4.50 calls @ 15 cents  
Bought 1,000 shares @ \$5.00  
(now trading at \$4.50)



# Bull spread

Bull spread	
Construction	long call X, short call Y
Point of entry	market around the lower strike
Break-even point (at expiry)	lower strike plus cost of spread
Maximum Profit (at expiry)	difference between strike prices less cost of spread
Maximum loss (at expiry)	net premium paid
Time decay	market around lower strike: hurts market around higher strike: helps
Margins to be paid?	no



## When to use the bull spread

Market outlook	mildly bullish
Volatility outlook	steady to increasing

If the investor is not bullish enough to buy a call outright but expects the share price to rise moderately, the bull spread is a lower cost way to gain exposure to such a market movement.

## Profits and losses

While the short call reduces the risk inherent in taking an outright call it also limits the profits that can be made. The maximum profit obtainable is the difference between the strike prices of the two options, less the cost of the spread. Maximum profit will occur if, at expiry, the share price is at, or above, the strike price of the sold option. If the stock rises quickly to this level, the spread will often be unwound early in order to avoid the risk of early exercise on the short leg. The higher delta of the long call means that the spread will increase in value as the share price rises.

The maximum loss possible is the cost of the spread and will be incurred when the share price is at or below the strike price of the bought option at expiry.

## Other considerations

- Limited risk/limited reward: the bull spread is a cheaper strategy than simply buying a call option. As a result, the profit potential is also reduced.
- Cost of strategy: the investor must be satisfied that the cost of the spread is worth the potential reward. Commission costs on entering and exiting will be greater for this strategy than when buying a call outright.

## Follow-up action

If the stock unexpectedly rises sharply, it may be advisable to exit the strategy once the upper strike price is reached. Although time value is helpful around the strike price of the short leg, unwinding the strategy early removes the risk of exercise on the short call. If the stock price falls suddenly, the spread may be unwound before the taken call loses too much time value.

### Points to remember

- Consider the bull spread when you are expecting a limited rise in the price of the stock.
- Be sure that the cost of the spread is justified by the potential reward.
- Do not 'leg in' to this strategy - enter the trade as a spread and unwind it as a spread.

### The Bull put spread

The bull put spread can be constructed using puts instead of calls. As with the call spread, the investor buys the lower strike option and sells the higher strike option.

The investor may decide to construct the spread in this way if the options are perceived to be overpriced. Since entering the put spread involves selling volatility, the higher option premiums will benefit the trader. In contrast, they make the call spread more expensive to enter.

The bull put spread can also be viewed as writing a put with protection in place against a collapse in the market. In this case, the written put may be close to being at-the-money, with the taken put out-of-the-money.

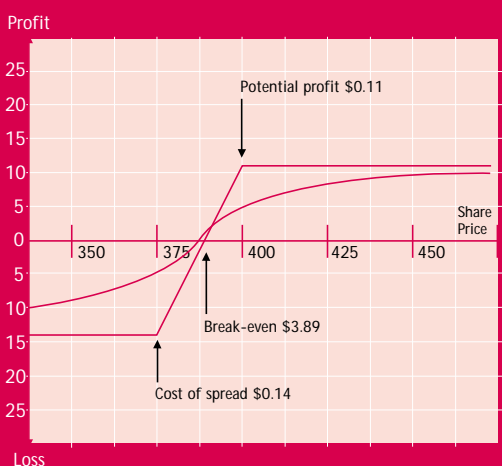
The maximum profit from the bull put spread is the premium received when the spread is established. The maximum loss is the difference between the strike prices less the premium received.

The disadvantages of the bull put spread are twofold. Since the spread is placed for a net credit, collateral cover will be required. Secondly, the risk of exercise on the short leg is much greater than with the call spread, because the short put has the higher exercise price, and is likely to be around the money at the time the spread is entered. Any fall in the share price could result in early exercise of the short put.

### Example

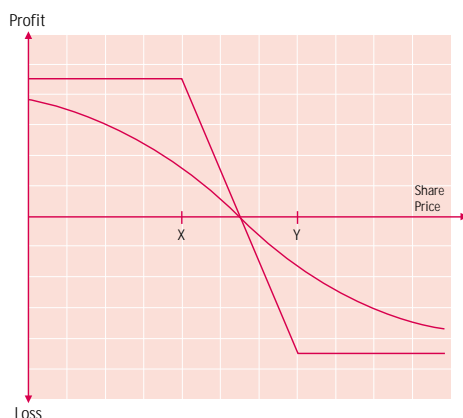
Shares in BIG Limited have risen strongly over the last six months to a price of \$3.70. The market is quietening down, but you think that BIG may still rise further to around \$4.00 over the next three or four months. You consider the at-the-money call too expensive to buy outright, so you decide to buy the spread for \$0.14

**Buy 1 May \$3.75 Call @ \$0.43 and  
Sell 1 May \$4.00 Call @ \$0.29**



# Bear spread

Bear spread	
Construction	short put X, long put Y
Point of entry	market around upper strike
Break-even point (at expiry)	upper strike less cost of spread
Maximum profit (at expiry)	difference in strike prices less cost of spread
Maximum loss (at expiry)	net premium paid
Time decay	market around lower strike: helps market around upper strike: hurts
Margins to be paid?	no



## When to use the bear spread

Market outlook	mildly bearish
Volatility outlook	steady to increasing

The bear spread could be considered when the investor expects a moderate fall in the market but is not prepared to pay to take a put outright.

## Profits and losses

As with the bull spread, the written leg of this strategy serves to reduce the cost of entering the position. However it also caps the profits that can be earned. The maximum profit to be earned is the difference between the strike prices of the two options, less the cost of the spread. If, at expiry, the share price has fallen to the strike price of the sold option, the maximum profit will be earned. If the stock declines to these levels, the trader may well choose to unwind the spread early, in order to avoid the possibility of exercise on the short leg.

The maximum potential loss is the cost of the spread. This will occur if, at expiry, the share price is above the exercise price of the bought option.

## Other considerations

- Limited risk/Limited reward: the bear spread costs less to place than the outright purchase of a put option. As a result, the potential for profit is also reduced.
- Cost of strategy: the investor must be satisfied that the cost of the spread is justified by the potential reward. Commission costs on entering and exiting can significantly reduce profitability.

## Follow-up action

If the stock unexpectedly falls sharply, it may be advisable to exit the strategy once the lower strike price is reached. Time decay will benefit the spread around the lower strike price, however the trader will usually be more concerned with avoiding exercise on the short leg.

If the stock price rises suddenly, the spread may be unwound before the taken put loses too much time value.

### Points to remember

- Use the bear spread when you are expecting a limited fall in the underlying stock.
- Be sure that the cost of the spread is justified by the potential reward.
- Do not 'leg in' to this strategy but rather trade both options at the same time.

### The bear call spread

The bear call spread can be constructed using calls instead of puts. As with the put spread, the trader buys the higher strike option and sells the lower strike option. The trader may decide to use calls instead of puts in order to take advantage of options that are viewed as overpriced. Since the trader is selling the spread, the receipt of higher premiums is a benefit. There may also be greater liquidity in calls than puts, giving greater flexibility when entering and exiting the spread.

The maximum profit available is the value of the premium received. The maximum loss is the difference between the strike prices less the premium received.

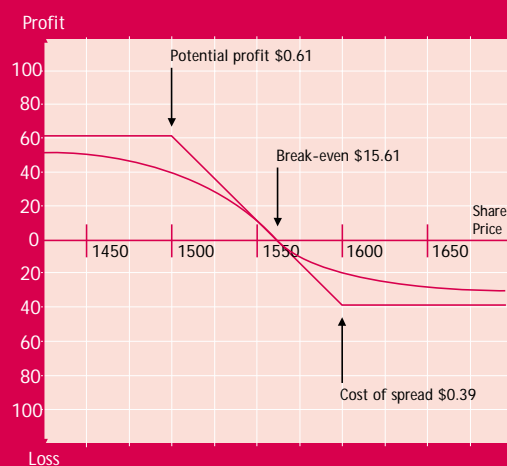
The bear call spread can be seen as writing a call with protection against an unexpected rise in the market. In this instance, the trader may write a call around the money, and take a call out-of-the-money, which effectively provides a ceiling to the potential loss if the market should rise.

The disadvantages of the bear call spread are similar to those of the bull put spread. Since the spread is placed for a credit, there will be margining obligations. Secondly, there is an increased risk of exercise, since the short call has the lower strike price, and is usually written at-the-money.

### Example

After a period of rises in the market, you feel that a minor correction is about to take place. ABC shares have run up to \$16.10, and you believe that they could pull back to around \$15.00 over the next two to three months. You are not willing to pay for an outright put, so you decide to buy a bear put spread:

**Buy 1 Dec \$16.00 Put @ \$0.61 and  
Sell 1 Dec \$15.00 Put @ \$0.22**



# Long straddle

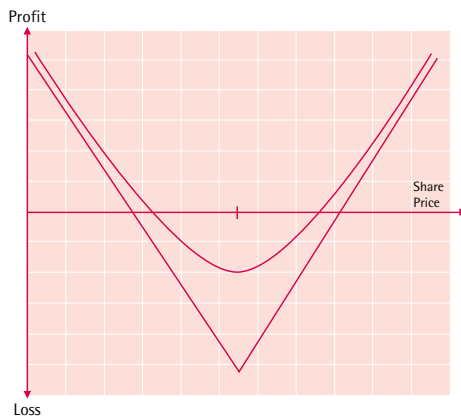
Long straddle	
Construction	long call X, long put X
Point of entry	market near strike price X
Break-even points (at expiry)	strike price plus net premium paid strike price less net premium paid
Maximum profit (at expiry)	unlimited
Maximum loss (at expiry)	limited to premium paid
Time decay	hurts the long straddle
Margins to be paid?	no

## Profits and losses

At expiry, the investor will make profits if the share price has moved strongly enough in either direction. Profits can be taken early in the life of the straddle, but only if the expected movement occurs quickly. As the market moves strongly in one direction, the gain made on one leg exceeds the loss incurred on the other, and the straddle increases in value.

## Other considerations

- Time decay: the bought straddle consists of two long positions. As a result, time decay works strongly against the bought straddle. The longer the straddle is left in place, the greater the loss due to time decay. The position must therefore be closely monitored and may need to be closed out well before expiry.
- Expiry month: the investor must balance the cost of the strategy against the time needed to give it the best chance of success. The more distant expiry months will provide the strategy with more time, however longer dated options will be more expensive than those with shorter dates.



## When to use the long straddle

Market outlook	uncertain
Volatility outlook	rising

Where the investor expects a sharp movement in the share price, but is unsure of the direction it will take, the long straddle may be appropriate.



## Follow-up action

The taker of a long straddle expects volatility in the market to increase. Only rarely will this strategy be held to expiry. If the investor's market view proves correct, the straddle should be unwound to crystallise the profits. The position can be liquidated on both sides simultaneously or, if the out-of-the-money option has little value, it could be left open in case the market were to reverse.

If volatility does not increase as expected, the strategy should be taken off well ahead of expiry, before time decay damages the position.

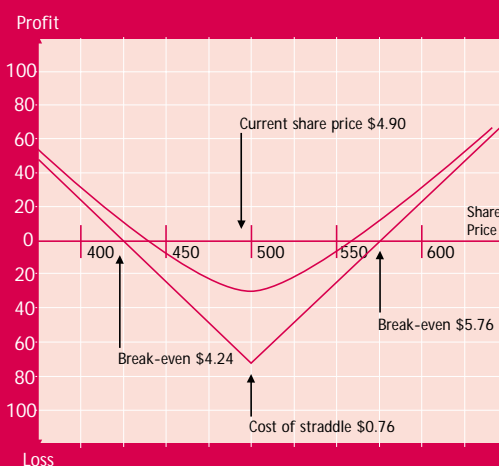
## Points to remember

- Choose options over shares you expect to remain or become volatile.
- Select an expiry month that gives the strategy time to work.
- Monitor the position closely and be prepared to unwind it well before expiry.

## Example

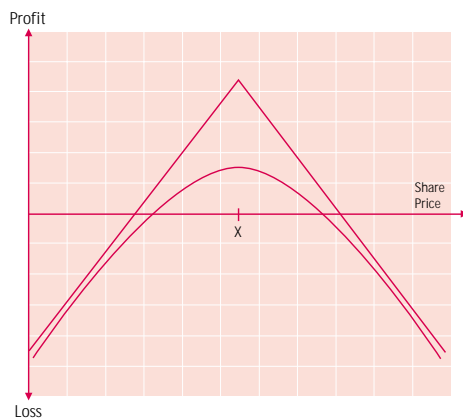
ABC Limited is a gold mining company which has been involved in an extensive exploration program over the last few months. The results of this program are due to be made public in a month. If significant reserves have been discovered, the stock price will show large gains. You believe, however, that if the exploration program proves unsuccessful, ABC's share price will fall sharply. You also believe the price of gold is likely to be volatile over the next six months. The current share price, at the end of July, is \$4.90. You decide to buy a straddle.

**Buy 1 Nov \$5.00 Call @ \$0.38 and  
Buy 1 Nov \$5.00 Put @ \$0.38**



# Short straddle

Short straddle	
Construction	short call X, short put X
Point of entry	market near strike price X
Break-even points (at expiry)	strike price plus net premium received strike price less net premium received
Maximum profit (at expiry)	limited to premium
Maximum loss (at expiry)	unlimited
Time decay	helps the short straddle
Margins to be paid?	yes
Synthetic equivalent	long underlying asset; short 2 calls



## When to use the short straddle

Market outlook	aggressively neutral
Volatility outlook	falling

For the investor who believes the share price is stagnating, the short straddle may be an appropriate way of earning income.

## Profits and losses

The short straddle is a high risk strategy, with the potential for damaging losses if the share price moves sharply in either direction. The maximum profit that can be earned from the short straddle is the premium earned from the sale of the options. Maximum profit will result if the share price is at the strike price at expiry. If the share price moves strongly in either direction, the net premium received for selling the straddle provides limited protection, beyond which unlimited losses can occur. The stronger the move, the greater this loss will be.

## Other considerations

- Time decay: the sold straddle consists of two short positions. As a result, time decay assists the combination. In order to get the greatest benefit from time decay, it may be best to trade options with near-month expiries, where time decay is starting to accelerate.
- Risk of exercise: unless the share price is exactly at the strike price of the two options sold, one of the legs will be in-the-money. Therefore, there is always a risk of early exercise on one leg or the other.
- Taking protection: the trader who is unhappy about being exposed to possibly unlimited losses may consider limiting their potential loss. This can be achieved by taking a put and a call option with out-of-the-money strike prices. Taking protection in this way transforms the short straddle into a synthetic version of the long butterfly (see page 26).

- **Volatility:** An increase in volatility will be damaging to the short straddle. The two written options may rise in value, making them more expensive to buy back. The higher volatility also signals that the market may be about to move strongly. The option trader must monitor volatility closely and be prepared to take action should it increase unexpectedly.

### Follow-up action

If the share price remains stable around the strike price, the maximum profit will occur. However, because of the risk of exercise, few short straddles are held until expiry.

In the event of an adverse market movement, the investor may decide to close out one or both legs of the straddle. Alternatively, as mentioned above, an out-of-the-money option could be taken as protection. The costs of adjusting the existing straddle position should be weighed against the risks of leaving it in place.

### Points to remember

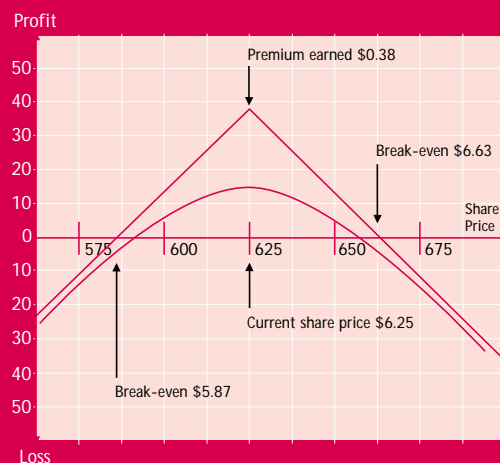
- The short straddle is a high risk strategy and should only be employed if you are very confident that the share price will remain steady.
- Do not choose expiry months that are too distant.
- Be prepared to adjust your position if the share price moves strongly in either direction, or volatility increases.

### Example

XYZ is an Australian bank. It has recently released profit figures which were in line with market expectations. Interest rates have been steady for several months and you believe they will remain stable for the next six months. You believe that during this period, XYZ's share price will not move significantly from current levels of around \$6.25. In order to gain some income you decide to write a straddle.

**Sell 1 Nov \$6.25 Call @ \$0.22 and  
Sell 1 Nov \$6.25 Put @ \$0.16**

Derivatives  
Division  
1800 028 585

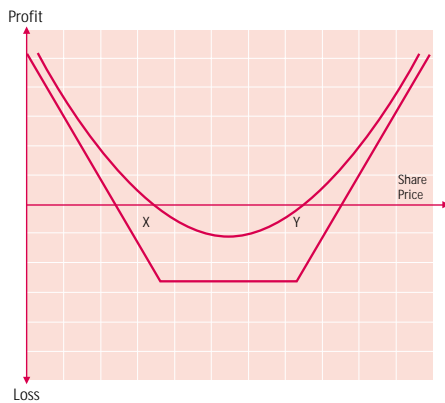


# Long strangle

Long strangle	
Construction	long call Y, long put X
Point of entry	market between the two strike prices
Break-even points (at expiry)	higher strike price plus net premium paid lower strike price less net premium paid
Maximum profit (at expiry)	unlimited
Maximum loss (at expiry)	limited to premium paid
Time decay	hurts the long strangle
Margins to be paid?	no
Synthetic equivalent	long call X, long put Y

Derivatives  
Division  
1800 028 585

18



## When to use the long strangle

Market outlook	uncertain
Volatility outlook	rising

In a market that has been consistently stagnant and implied volatilities are low, buying a strangle may be appropriate. The taker of this spread is looking for an explosive move in either direction. The strangle is a cheaper strategy than the straddle, however a larger move in the share price will be required for it to be profitable.

## Profits and losses

The success of the long strangle depends on a dramatic increase in the volatility of the underlying shares or a sharp move in the share price. Profits will be made towards expiry if the share price has risen far enough past the strike price of either option to cover the premium paid. As with the long straddle profits can be taken early in the life of the strategy if there has been a big enough move in the share price.

## Other considerations

- **Time decay:** as with the long straddle, the long strangle is exposed to time decay. Since both options are out-of-the-money, they consist entirely of time value. As expiry approaches, time decay accelerates. For this reason, the strangle is generally unwound well before expiry.
- **Volatility:** since the strangle is constructed using out-of-the-money options, it costs less than the straddle. The disadvantage is that the share price must move further for the strategy to be profitable. The investor must be expecting a significant move for the long strangle to be considered. If the expected increase in volatility or change in share price does not eventuate, both options will expire worthless.

## Follow-up action

The strangle should not be held too close to expiry. If the expected move in the share price has taken place, the position can usually be unwound at a profit well before expiry. If the stock's direction becomes clear, it may be appropriate to close out the leg that is losing its value and hold the profitable leg.

If the expected increase in volatility has not taken place, it may be advisable to close the position out before time decay starts to seriously damage the strategy.

## Points to remember

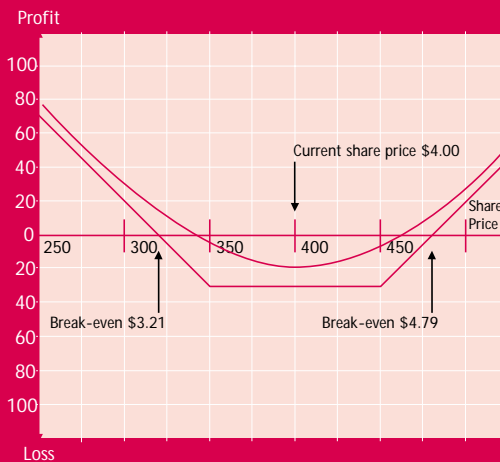
- Choose options over shares whose price you expect to move strongly in either direction.
- Always be aware of the effects of time decay and do not hold the position too close to expiry.
- Choose expiry months that allow enough time for the underlying shares to move.

## Example

AML Limited has been trading at around \$4.00 for the last three months. Several large export contracts are up for renewal in the next two months. You believe that the share price will move significantly, depending on whether the company retains these contracts. You are not prepared to pay for an expensive straddle, but want to be exposed to either a fall or a rise in AML's price. It is now October and you decide to purchase a strangle.

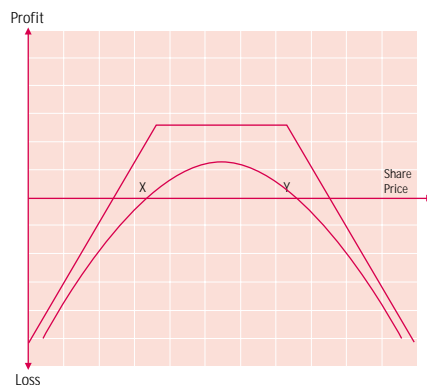
**Buy 1 Feb \$4.50 Call @ \$0.19 and  
Buy 1 Feb \$3.50 Put @ \$0.10**

Derivatives  
Division  
1800 028 585



# Short strangle

Short strangle	
Construction	short call Y, short put X
Point of entry	market between the two strike prices
Break-even points (at expiry)	higher strike price plus net premium received lower strike rate less net premium received
Maximum profit (at expiry)	limited to premium
Maximum loss (at expiry)	unlimited
Time decay	helps the short strangle
Margins to be paid?	yes
Synthetic equivalent	short call X, short call Y



## When to use the short strangle

Market outlook	neutral
Volatility outlook	falling

When option premiums are overpriced, and the trader believes the underlying shares will stay within a fairly narrow price range, the short strangle may be considered. This strategy has a lower potential profit than the short straddle, however it offers greater protection since the share price must move further to result in a loss.

## Profits and losses

The maximum profit that can be earned from the short strangle is the premium received from the sale of the options. This will occur if the share price finishes between the two strike prices at expiry. As the share price moves beyond the strike price of either option, profits decrease. A loss will result if the move is large enough to erode the premium received at the time of writing the options. Should the share price become unexpectedly volatile, the strangle writer faces potentially unlimited losses.

## Other considerations

- **Volatility:** the strangle yields lower potential profit than the straddle because of the lower premiums received for writing out-of-the-money options. However, the strategy provides better protection against an unexpected increase in volatility in the underlying shares than the straddle as the share price has to move much further before the strategy incurs a loss for the writer.
- **Time decay:** as with the short straddle, the short strangle benefits from time decay. It is often best to construct this combination using options with near month expiries so as to gain the most from time decay.
- **Risk of exercise:** as the strangle is constructed using out-of-the-money options, there is lower risk of early exercise than for the straddle. However, a dramatic change in the share price can bring one of the options into-the-money thereby introducing the risk of exercise.

- Taking protection: the option trader may choose to limit potential losses by purchasing protection. Taking a call and a put, both of which are further out-of-the-money than the written options, places a ceiling on losses. While the cost of taking these options reduces potential profit it may be worthwhile for the conservative investor. By taking protection, the short strangle is transformed into another strategy known as a long condor.

### Follow-up action

If the share price stays within a narrow band as expected, the position may be maintained until near expiry in order to gain the maximum benefits from time decay.

If the share price makes an unexpected move, the trader should consider closing out the option which is in danger of being exercised. Another alternative is to vary the break-even points of the strategy by rolling one of the legs up or down, thereby maintaining the strangle. The trader should always be aware that although the short strangle is a more defensive strategy than the short straddle, a sudden and extreme change in volatility can be very damaging.

### Points to remember

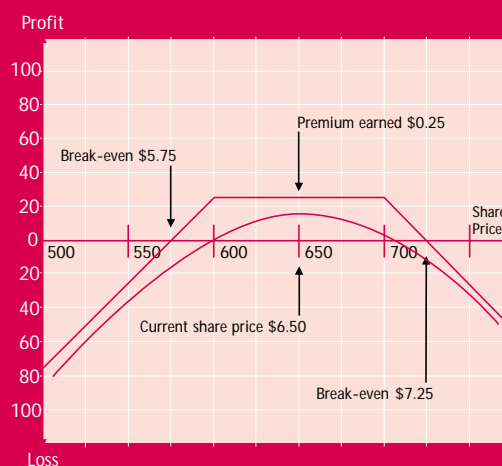
- Because of the potential for unlimited losses, be sure that the premium received is worthy of the risk taken.
- Use the short strangle over the short straddle if you have any doubts about the market's neutrality.
- Do not choose expiry months that are too distant.

### Example

It is now July, and following a period of relatively high volatility in the price of RST Limited, option prices are high. You believe that the market is about to enter a quieter phase with the stock likely to trade in a range around its current price of \$6.50. However, you are unwilling to take the risk of writing a straddle over the stock in case the share price fluctuates more than expected. You decide to write a strangle.

**Sell 1 Sep \$7.00 Call @ \$0.17  
and Sell 1 Sep \$6.00 Put @ \$0.08**

Derivatives  
Division  
1800 028 585

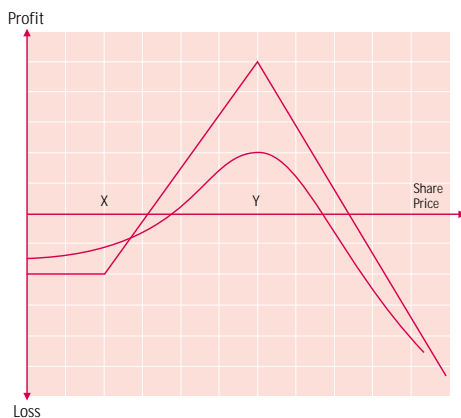


# Ratio call spread

Ratio call spread	
Construction	long call X, short calls Y
Point of entry	market around X
Break-even points (at expiry)	lower strike plus cost of the spread upper strike plus maximum profit of spread
Maximum profit (at expiry)	difference between strike prices less cost of spread
Maximum loss (at expiry)	unlimited if shares rise cost of spread if shares fall
Time decay	market around lower strike: hurts market around upper strike: helps
Margins to be paid?	yes, on naked calls
Synthetic equivalent	long stock, long put X, short calls Y

Derivatives  
Division  
1800 028 585

22



## When to use the ratio call spread

Market outlook	neutral to slightly bullish
Volatility outlook	steady to falling

The ratio call spread may be an appropriate strategy for the investor who expects a slight rise in the market, but sees the potential for a sell-off.

## Profits and losses

If the share price is at the higher strike price of the spread at expiry, the maximum profit point will be reached. The potential for profit is partly dependent on how many calls have been sold against each call taken. Generally the ratios are opened on a 1:2 basis and rarely higher than 1:3 due to the increased risk this would introduce should the shares rise strongly.

If the shares fall, the trader can lose no more than the cost of the spread. This protection against a fall in the price of the shares is greater than in the case of a bull call spread due to the higher number of written positions in place. However, if a strong upward movement occurs unexpectedly the trader faces potentially unlimited losses. The higher the number of unprotected calls that have been written, the larger the loss that could be incurred.

Ideally the spread is opened for a profit, which involves no risk if the shares fall.

## Other considerations

- Market strengthens: the ratio call spread provides good protection for the investor in the event of a market downturn. The price of this protection is the possibility of a loss should the market move further upwards than expected.
- Exercise: because the strategy involves uncovered written positions, the risk of exercise must be considered. The trader must meet the collateral requirements of the uncovered calls.



## Follow-up action

The main threat to the ratio call spread comes from a greater than expected strengthening in the market. If this occurs, the trader may consider closing out the spread, or alternatively closing out the sold options to reduce the risk of exercise.

If the share price falls dramatically, the trader may buy back the long call before it loses too much time value. The danger in closing out the long position is that a market reversal leaves the trader totally exposed on the short legs.

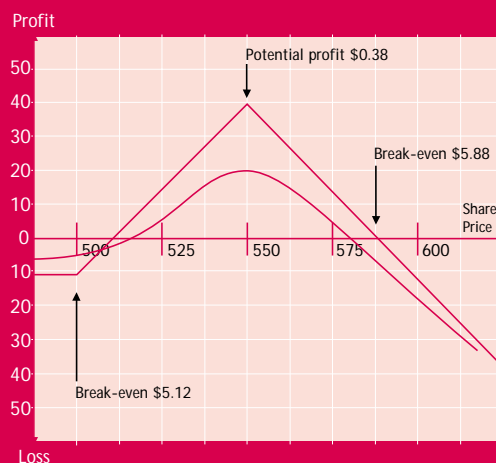
## Points to remember

- This strategy benefits from a small upward movement in the market. It should not be used if a strong upward movement is expected.
- Be wary of constructing the strategy on a ratio higher than 1:2.
- Be prepared to act quickly if the share price jumps unexpectedly.

## Example

After a rise in the market over the last six months, you believe there is still some possibility for the shares to rise further. However, given the recent highs reached overseas, you fear the possibility of a downward correction. You decide to place a ratio call spread in RST Limited shares.

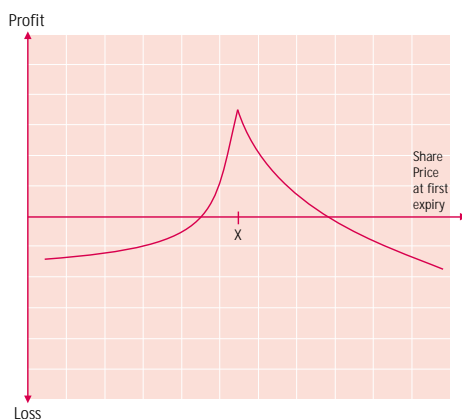
**Buy 1 Sep \$5.00 Call @ \$0.38 and  
Sell 2 Sep \$5.50 Calls @ \$0.13**



Derivatives  
Division  
1800 028 585

# Calendar spread

Calendar spread	
Construction	short call X, near expiry long call X, far expiry
Point of entry	market around strike price
Break-even points	undetermined in advance
Maximum profit (at expiry)	undetermined but limited
Maximum loss (at expiry)	limited to cost of spread
Time decay	helps the calendar spread
Margins to be paid?	no



## When to use the calendar spread

Market outlook	neutral to first expiry
Volatility outlook	neutral to first expiry

In a neutral market, the calendar spread provides a method for the trader to earn income by profiting from time decay. This is achieved without the risk of an uncovered sold position.

## Profits and losses

Since the calendar spread involves two expiry months, it is not possible to construct an accurate payoff diagram for the strategy at expiry of the sold option. The value of the long option at this point can only be estimated using pricing models. However, the maximum profit will be realised if the share price is at the strike price of the options at the first expiry. The sold call will then expire worthless, while the long call will have the most possible time value remaining.

The calendar spread benefits from the different rate of time decay of the two options involved. Time decay of the near month option's premium will be faster than that of the far month option. This has the effect of widening the spread between the two prices.

The maximum loss possible is the cost of the spread. This will occur if the long call has very little time value left at expiry, in other words if the share price has either risen or fallen dramatically.

## Other considerations

- Exercise: if the share price rises, both legs will come into-the-money. In this case, the trader faces the possibility of early exercise on the short leg. The long leg acts as a hedge, but the cost and inconvenience of being exercised must be considered.
- Buying stock cheaply: the calendar spread can be used as a way of acquiring stock below the current market price. If an investor expects the share price to rise, but does not foresee this taking place within the next month, buying a calendar spread effectively gives the investor a call option once the near month expiry has passed, however at a lower cost than taking a call outright.

- Volatility: an increase in short term volatility can be damaging to the calendar spread, since it works against the desired fall in value of the sold call option.

### Follow-up action

If the market remains steady, the investor may choose to do nothing and let time decay take its course, resulting in the short call expiring worthless. The investor can then close out the long call or perhaps hold on to it if expectations are now bullish. Holding the call converts the strategy to a simple taken option position, with the attendant risks and rewards.

If the stock falls unexpectedly, the investor may choose to close the spread before the long call loses all time value. Otherwise, the position could be left in the hope that the market recovers and the long call improves in value.

In the event of a market rise, the investor must decide whether to close out the spread to avoid exercise or maintain it in the hope that the market retreats and time decay can take effect.

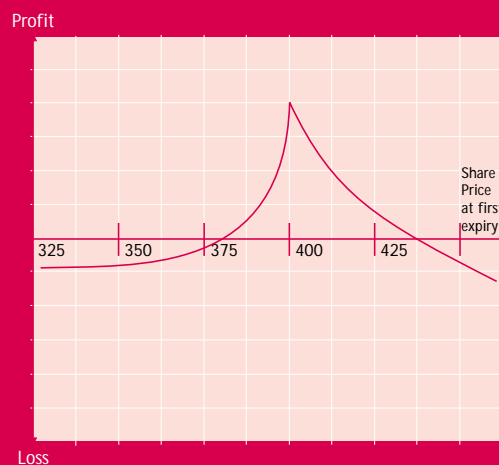
### Points to remember

- Take advantage of time decay by entering the spread around six weeks before expiry of the near-term option.
- Be wary of leaving the taken call open after expiry of the sold option. If this is the case then the position becomes a different strategy.

### Example

You believe that shares in ABC Limited are likely to remain stable for at least two months, and wish to earn some extra income during this period. However, you are not prepared to expose yourself to the risks involved in writing an uncovered option. You decide to enter a calendar spread.

**Sell 1 Dec \$4.00 Call @ \$0.22 and Buy 1 Mar \$4.00 Call @ \$0.38**

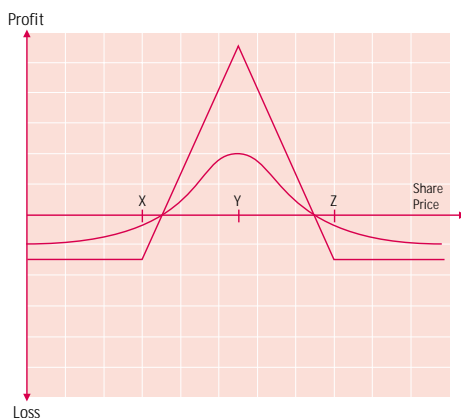


# Long butterfly

The long butterfly	
Construction	long call X, short 2 calls Y, long call Z
Point of entry	market around central strike price
Break-even points (at expiry)	lower strike plus cost of spread upper strike less cost of spread
Maximum profit (at expiry)	central strike less lower strike less cost of spread
Maximum loss (at expiry)	cost of spread
Time decay	market around upper or lower strike: hurts market around central strike: helps
Margins to be paid?	yes
Synthetic equivalent	various (see below)

Derivatives  
Division  
1800 028 585

26



## When to use the long butterfly

Market outlook	neutral
Volatility outlook	falling

The long butterfly can be used to generate extra income when the investor believes the market is stagnating but does not want exposure to an unexpected rise or fall.

## Profits and losses

The maximum profit from the long butterfly will be earned if the market finishes at the middle strike price at expiry. In this case, only the lower strike price call will finish in the money. Accordingly, the trader will profit on the difference between the middle and lower strike price, less the cost of the spread. Most of this profit will develop in the last month as time decay accelerates. The most the trader can lose is the cost of the spread, which will occur if the market finishes out past either 'wing' of the long butterfly.

## Other considerations

- Exercise: the presence of short options in the strategy means that an increase in the market price above the central strike price introduces the risk of exercise.
- Market liquidity: the long butterfly can be difficult to place in all but the most liquid stocks. The away-from-the-money options that are required on both sides are often thinly traded, making the strategy difficult and sometimes costly to set up and trade out of. In these circumstances, the reward may not justify the effort of entering the position.

## Follow-up action

If the share price remains steady, the position may be left until close to expiry since the profit develops almost entirely in the last month.

If the share price moves sharply up, the trader may consider liquidating the position in order to avoid exercise. If the share price moves sharply down, the trader may close out in order to salvage some time value from the taken legs of the strategy.

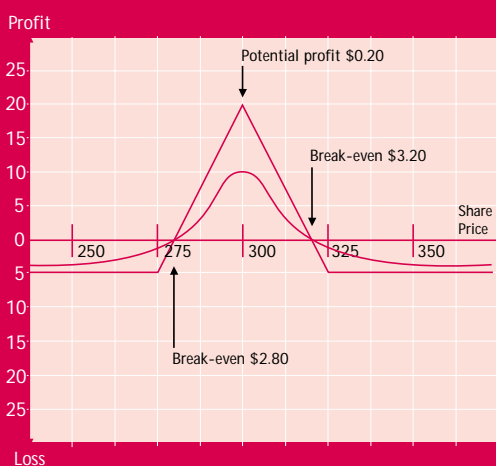
### Points to remember

- Be sure the rewards are sufficient to justify establishing the strategy in the first place.
- Do not use this strategy on thinly traded stocks.
- Enter the position with at least a month until expiry.

### Example

It is now December. You believe that shares in XYZ Limited are likely to remain steady for a couple of months and wish to derive some income during this period. You consider selling a straddle but are concerned that an unexpected break either way in the market could be very damaging. You decide to use the long butterfly in order to limit the loss you would face in the event of such a move.

Buy 1 Feb \$2.75 Call @ \$0.45  
Sell 2 Feb \$3.00 Calls @ \$0.27  
Buy 1 Feb \$3.25 Call @ \$0.14



### Synthetic alternatives

As outlined above, the long butterfly can be constructed using only calls. However, there are several alternate ways to set up this strategy. These include:

- Long put X, short two puts Y, long put Z
- Long put X, short put Y, short call Y, long call Z
- Long call X, short call Y, short put Y, long put Z

The decision as to how to construct the long butterfly will be influenced by several factors.

The cost of the strategy may vary depending on the component options used. The trader may need to examine the most economical way of entering the position.

The liquidity of the various series of options should be considered as the long butterfly may be difficult to trade at the best of times.

While the use of the long butterfly implies a neutral view of the market's direction, any leaning towards bullishness or bearishness will influence the choice of component options. Since the strategy always involves the sale of options around-the-money, there is always the risk of exercise as the market price moves away from the central strike price. Whether this risk is present in the case of a market rise or a market fall, will depend on whether calls, or puts, or a combination of the two, have been sold. If the trader has built the long butterfly using only calls, a rise in the market introduces the risk of exercise. If only puts have been used, a fall in the market exposes the trader to the same risk. Therefore, any directional view of the market the trader holds may suggest one way of structuring the long butterfly in preference to another.

The second of the three alternatives listed above suggests the long butterfly can be thought of as an extension of the short straddle. The outer wings act as protection in case of a sharp move in the market. A sharp market move can be devastating to the short straddle, whereas the loss is limited for the holder of a long butterfly. Once the stock price moves beyond the strike price of one of the outer legs, the trader is protected from any further loss.

# Synthetics

A synthetic strategy is a strategy which produces the same risk/reward profile as another strategy, but is constructed using different instruments. Almost all option trades have synthetic equivalents.

So why use a synthetic strategy? A synthetic strategy may provide a cheaper entry into a position, or a more effective way to use the option market at the particular time. Professional traders use synthetics to price different instruments. A comparison of different ways of achieving the same position can assist in identifying which options are over- or undervalued.

The use of synthetics is usually more applicable to professional traders and market makers, however, there will be times when a synthetic alternative may be preferable for the private investor. An understanding of synthetics can increase an investor's understanding of options in general.

Options traders should be aware that the more complex the strategy, the higher the transaction charges are likely to be when entering and exiting the position.

## Example

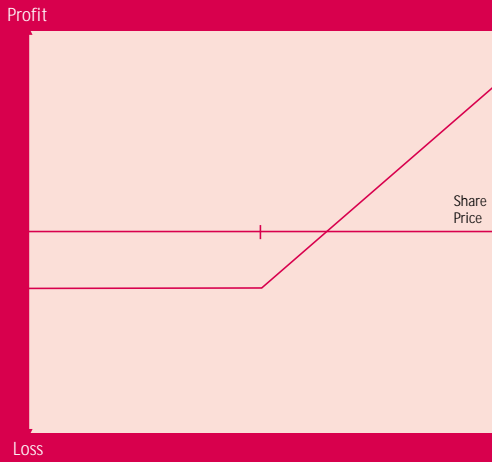
An investor is considering a buy/write strategy in AML shares. The shares are presently trading at \$4.00, and the investor considers buying 1000 shares and selling a March 400 AML call. However, he believes that call options are trading cheaply, and the premium earned by writing the March 400 call will return a low rate.

On the other hand, the investor believes that put options are currently overvalued. An alternative course of action to the buy/write would be to write the March 400 put, which is a synthetic buy/write. The end result at the March expiry of the options will be the same. If the shares are trading below \$4.00, the investor will end up holding the stock, and keeping the premium. If the shares are trading above \$4.00, the shares will be called away if the investor has done the buy/write, the investor retaining the premium. If the investor has written the March 400 put, it will expire worthless, the investor retaining the premium.

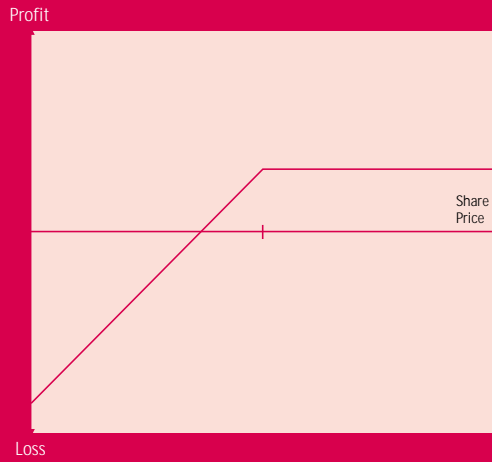
In making the decision between the two alternatives, the investor must consider the costs and benefits of share ownership, which would be part of the buy/write strategy. Any dividend due before the expiry date of the option should be taken into account, as should transaction costs and the cost of funding the position.

The six basic synthetic strategies are shown opposite.

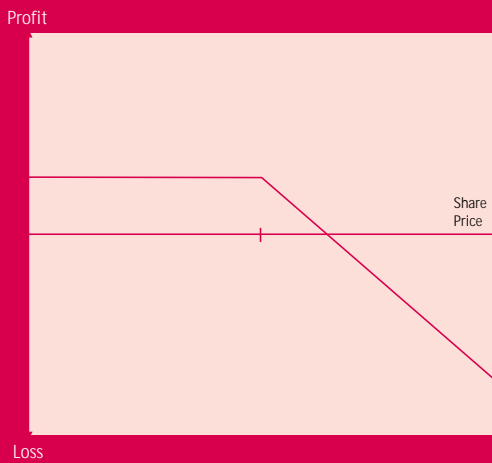
Long stock, long put = long call



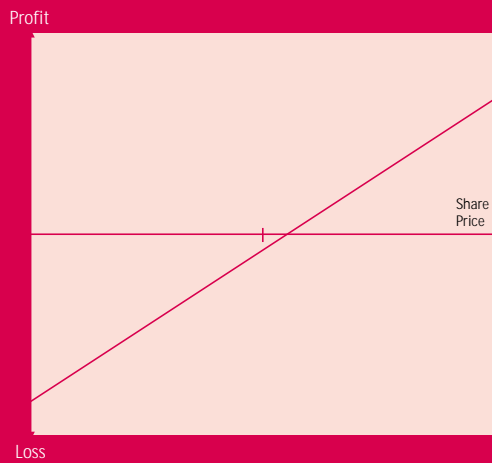
Long stock, short call = short put



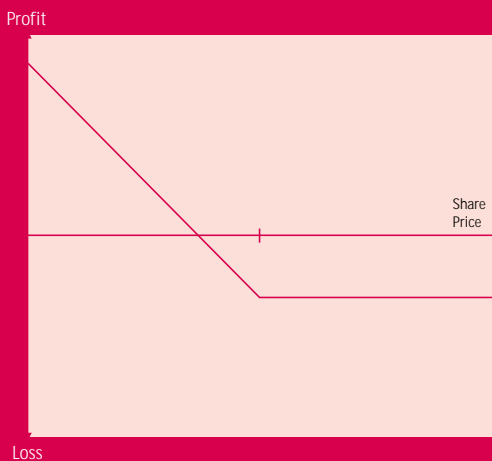
Short stock, short put = short call



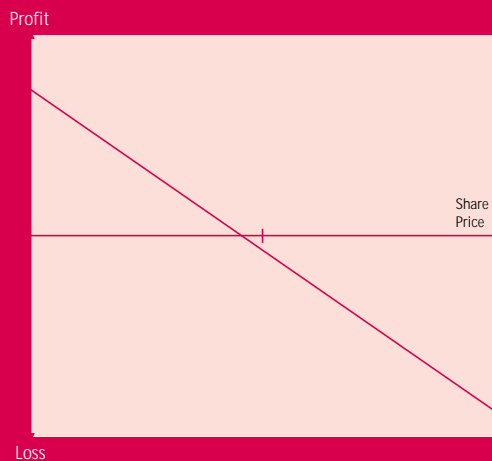
Short put, long call = long stock



Long call, short stock = long put



Short call, long put = short stock



In deciding whether to use a synthetic strategy, the option trader should consider:

- Pricing: A synthetic construction may represent a cheaper way of entering a position. However, professional traders will usually take advantage of any mispricing very quickly, and parity will be restored.
- The costs and benefits of stock ownership: Share ownership usually entitles the investor to dividends, franking credits, and voting rights. These entitlements are not available to the option trader. This may be a consideration when deciding between a position constructed solely with options, and one involving stock ownership. The investor who trades the buy and write, for example, will receive the dividends paid on the stock. Writing a put option over the stock can result in the same profit and loss profile as the buy/write, but without any entitlement to dividends or voting rights.
- Transaction costs: A strategy involving the purchase or sale of stock generally results in higher transaction costs.
- Liquidity: When considering alternative ways of constructing a strategy, the option trader should consider the liquidity of the relevant option series. For example, there may be more open positions in the call options of the particular stock than in the put options. Therefore if calls are used rather than puts to construct the strategy it may be easier to enter and exit those positions.

On the other hand, the writer of the put option saves on the funding cost of owning the shares that the buy and write strategy requires. This is only a saving until the put is exercised. It is important to keep in mind that a synthetic construction replicates another position only for the life of the options used in the synthetic. For example, an investor who trades the buy and write has a long stock position once the written call expires, while the investor who takes an equivalent synthetic position by writing a put has no position once the option expires.

- Exercise: With any strategy involving written options, the writer must be aware of the risk of exercise. Although the covered call writer and the writer of a put have the same profit and loss profile, the covered writer will be exercised if the stock rises, while the put writer will be exercised if the stock falls.



# Glossary of terms

---

**Assignment** - the allocation of an exercise by the Options Clearing House (OCH) to a particular writer of an option series.

**At-the-money** - an option is said to be at-the-money when the exercise price of the option is equal to the current share price.

**Break-even** - the point at which the option investor has covered their costs.

**Collateral** - shares, cash, bank guarantees, shares bought on margin, or other forms of security accepted by OCH to offset margin obligations.

**In-the-money** - a call option is said to be in-the-money when the exercise price is less than the current share price and a put option is said to be in-the-money when the exercise price is above the current share price.

**Leg into** - rather than establishing the strategy as a single trade, some investors decide to trade one part, or leg, of the strategy and then trade the other part at a later time. This is called legging into the strategy.

**Long** - an investor is said to be long an instrument when they have bought it. e.g. buying calls to open is described as being 'long calls'.

**Margins** - a security payment, in the form of cash or other acceptable cover, which is made to OCH to ensure an investor's obligations are met.

**Opening purchase** - a transaction in which a party becomes the taker of an option.

**Opening sale** - a transaction in which a party becomes the writer of an option.

**Out-of-the-money** - a call option is said to be out-of-the-money when the exercise price is above the current share price and a put option is said to be out-of-the-money when the exercise price is less than the current share price.

**Roll down** - an investor rolls down when they sell their current option and buy one with a lower strike price.

**Roll forward** - an investor rolls forward when they sell their current option and buy one with a longer term to expiry.

**Roll up** - an investor rolls up when they sell their current option and buy one with a higher strike price.

**Short** - an investor is said to be short an instrument when they have sold it. e.g. selling puts to open is described as being 'short puts'.

**Synthetic** - a synthetic strategy is one combining two or more instruments to give the same payoff result as one primary instrument.

**Time decay** - the reduction in the level of time value attached to an option premium due to the passage of time.

**Unwind** - an investor unwinds a strategy when they reverse it. e.g. buying back the two options that make up the short straddle.

**Volatility** - a measure of the expected amount of fluctuation in the price of a particular security.

# Further information

Explanatory booklets and other information is available on the ASX website - [www.asx.com.au](http://www.asx.com.au)

- Understanding options trading
- Margins
- Understanding trading & investment warrants
- LEPOs (low exercise price options)

## Courses

'An Introduction to Options' is a practical, 4 hour course where audience participation is encouraged, with an interactive question and answer format. No prior knowledge of ASX's options market is necessary. However it is assumed that those attending have a working knowledge of the sharemarket. The course is designed to provide participants with a practical knowledge of how to formulate and analyse different trading strategies and the different risk management techniques. The course is also available in Self Learning format.

'Options Trading Strategies' is a 4 hour course which builds on knowledge gained in the Introduction to Options course and demonstrates how the basic buying and selling of puts and calls can be used as building blocks for more advanced strategies.

Internet website:

[www.asx.com.au](http://www.asx.com.au)

Email address:

[derivatives@asx.com.au](mailto:derivatives@asx.com.au)

'An Introduction to Warrants'

ASX offers two Introduction to Warrants lectures that complement each other - 'Trading' and 'Investment' warrants. No prior knowledge of the warrants market is necessary, however an understanding of the share market is desirable.

On completion of both these lectures, you will be able to evaluate the use of warrants in your investment portfolio and assess the suitability of particular warrants to your investment objectives.

## Online Course

You may prefer to complete these courses online in your own time at a pace that suits you. This course includes interactive exercises that will aid your learning and a quiz at the end of each section will show your progress. This is currently available for the options courses. The warrants online course is currently under development.

For further information on educational courses available, please fill in the form and mail it to the Derivatives Division of ASX. Alternatively, you can visit our website, call our toll free line or contact your broker.

Derivatives Office

Sydney

20 Bridge Street, Sydney, NSW 2000

Derivatives Division toll free information line: 1800 028 585

Please send me information on the educational courses offered by the Derivatives Division

Name: \_\_\_\_\_

Address: \_\_\_\_\_

Postcode: \_\_\_\_\_

Although Australian Stock Exchange Limited has made every effort to be accurate, it does not guarantee the accuracy of the information in this booklet. Accordingly Australian Stock Exchange Limited shall, to the extent permitted by law, not be liable for any loss or damage suffered by any person arising from any act or thing done or omitted to be done by any person in reliance upon all or any part of the information in this booklet. The information in this booklet is for education purposes only and no person shall invest monies or take or fail to take any other action in reliance upon the information in this booklet but should instead satisfy themselves independently

(whether by way of expert advice or otherwise) of the appropriateness of such action or inaction.

No part of this publication may be reproduced, stored in a retrieval system or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without the prior written permission of Australian Stock Exchange Limited.

Copyright by Australian Stock Exchange Limited.  
ABN 98 008 624 691. All rights reserved.

Edition 2 printed June 2001. Updated December 2002.





ASX

AUSTRALIAN STOCK EXCHANGE