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Topic 1: Introduction

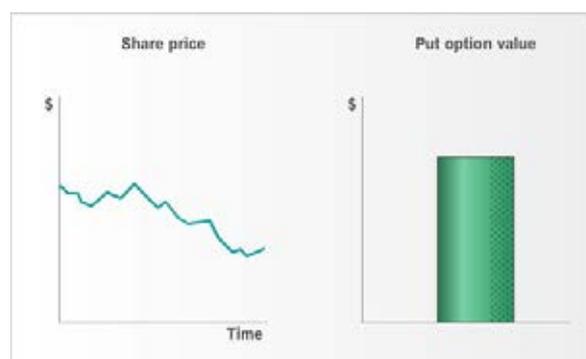
Many share investors are used to profiting only in rising markets. The 'conventional' approach is to buy when you think a share price will rise, and make money if your view turns out to be correct.

In a bearish market, the typical approach is to stay out of the market until you think prices will recover, at which point you may buy back in.

Put options give you the opportunity to profit from falling share prices.

As the share price falls, a put increases in value. The further the share price falls, the more money you make.

If the share price rises, the put will lose value, but the most you can lose is the premium you pay for the option.



* illustrative purposes

The put buyer's rights

Let's look at the following put option:

XYZ June \$10.00 Put @ \$0.34

XYZ June \$10.00 Put option @ \$0.34

Buying this option gives you:

- the right, but no obligation
- to sell
- 1000 shares in company XYZ
- for \$10.00 per share
- at any time up until the option expiry date in June.

- Right to sell
- 1000 XYZ shares
- For \$10.00 per share
- At any time up until the expiry date in June
- The option premium is \$0.34 per share

For this option, you pay \$0.34 per share i.e. \$340 for the option.

Assume XYZ shares are currently trading at \$10.00, and it is the start of May.

Purchasing a put option reflects a view that the share price will fall.

There are two main reasons to consider buying XYZ put options.

Leveraged exposure to a fall in the share price

You do not hold XYZ shares, and seek to profit from a fall in the share price.

Lock in a minimum sale price for the shares

You buy puts to protect XYZ shares you hold from a fall in the share price. Using puts to hedge a physical shareholding is covered in Module 7: 'Protect the value of your shares'.



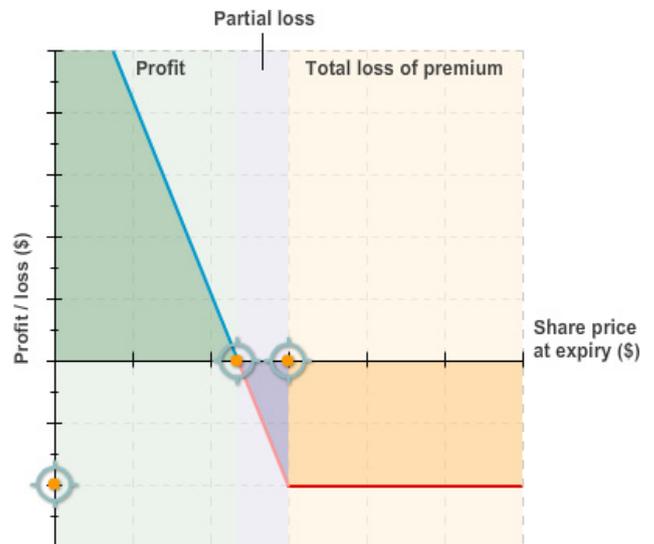
Profits and losses

The most you can lose when you buy a put is the premium you paid. You will incur this loss if at expiry the share price is at or above the exercise price.

If the share price is below the exercise price, the put option will have intrinsic value. The lower the share price is, the more the option will be worth.

The breakeven point is the exercise price less the premium paid. At this point, the option is worth what you paid for it.

Below the breakeven, you will make a profit - the lower the share price, the greater your profit.



Topic 2: Leveraged exposure to a falling share price

A put option is one of the few ways you can profit from a falling share price with limited risk.

[Short selling](#) shares is another way, but involves unlimited risk. There are significant restrictions on short selling shares on ASX, and in addition, some brokers do not permit short selling by retail clients.

Buying a put option is as straightforward as buying a call option, involves limited risk and offers leveraged exposure to a falling share price.

Buying puts to profit from a falling share price can be compared to buying calls to profit from a rising share price.



	Share	Put option
Original price	\$10	\$0.34
Price at expiry	\$9.00	\$1.00
Profit / loss	-\$1.00	\$0.66
% return	-10.0%	194.1%

Leveraged exposure

Leverage means a relatively large exposure for a relatively small cost. A small movement in the share price results in a larger change, in percentage terms, in the option price.

A put option is a fraction of the value of the underlying shares.

1,000 XYZ shares trading at \$10.00 are worth \$10,000, compared to \$340 for one June \$10.00 put option @ \$0.34.

If the share price falls, (all other variables stay the same) your percentage returns from the option are usually significantly more than the change in the share value. If the share price moves in the wrong direction, your losses in percentage terms are also magnified.



	Share	Put option
Original price	\$10	\$0.34
Price at expiry	\$12.00	--
Profit / loss	\$2.00	-\$0.34
% return	20.0%	-100%

Example

In early May, XYZ shares are trading at \$10.00.

You believe the share price will fall over the next two months, and buy one June \$10.00 put option @ \$0.34.

At expiry in late June, the share price has fallen to \$9.00, a drop of 10%.

The put option is worth \$1.00 (intrinsic value). Your profit is \$0.66, a return of 194%. (Not including transaction costs.)

The share price has moved favourably, and leverage has increased your returns.

Leverage works both ways. If the share price rises, the put option will suffer magnified losses in percentage terms.

If the share price rises by \$1.00 to \$11.00, the XYZ \$10.00 put will be out of the money, and expire worthless. The loss on the option is 100%. (Not including transaction costs.)

It's important to be clear that leverage refers to changes in *percentage* terms.

In *dollar* terms, the change in the share price will be more than the change in the option price. However if you increase your exposure by buying more options the loss as a dollar amount may also be higher.

	XYZ shares	XYZ \$10.00 put option
Buy price	\$10.00	\$0.34
Price at expiry	\$9.00	\$1.00
Profit / loss	-\$1.00	\$0.66
Return on investment (%)	-10%	194%

*Transaction costs not included

The 10% fall in share price has resulted in a 194% increase in the value of the put.

	XYZ shares	XYZ \$10.00 put option
Buy price	\$10.00	\$0.34
Price at expiry	\$11.00	\$0.00
Profit / loss	\$1.00	-\$0.34
Return on investment (%)	10%	-100%

*Transaction costs not included

The 10% rise in share price has resulted in a total loss of the option premium.

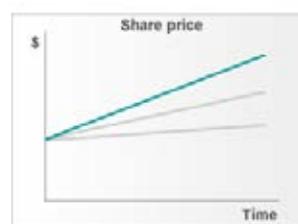
Limited risk

If the share price at expiry is above the exercise price, the put option will expire worthless - a loss of 100%.

In *dollar terms*, however, the amount at risk is relatively small. No matter how high the share price rises, the most you can lose is the premium you paid.

This is one significant advantage of buying a put over short selling shares and short selling ASX CFDs. When you are shorting these

The most you can lose is the premium



*Share / option equivalent position.

Loss from short-selling



Put option loss



products, you are exposed to unlimited risk if the share price rises.

What are the risks?

The main risk of buying a put is that the share price does not behave as you expect.

If the share price rises, or stays steady, the option will fall in value. If at expiry the share price is above the exercise price, the put will expire worthless.

A fall in volatility also hurts the bought put. If you buy a put and implied volatility subsequently falls, you can lose money - even if the share price has fallen moderately.

As with call options, time decay also works against you. The premium you pay for the put includes time value. At expiry, the option consists only of intrinsic value. To make a profit, the share price must have fallen far enough to cover the time value lost.

Increases put option value	Decreases put option value
Share price falls	Time decay
Implied volatility rises	Share price rises
	Implied volatility falls

Topic 3: Which put should I buy?

Once you have decided to buy puts, the next step is to choose the appropriate option.

You need to consider both strike price and expiry month, weighing the benefits of each option against the premium.

Assume that XYZ shares are trading at \$10.00 in early May.

You consider the following puts:

- June \$10.50 put @ \$0.64 (in the money (ITM))
- June \$10.00 put @ \$0.34 (at the money (ATM))
- June \$9.50 put @ \$0.15 (out of the money (OTM))

The factors to consider include:

- What must the share price be at expiry for you to break even?
 - Breakeven = exercise price - premium.
- How much are you paying for the option?

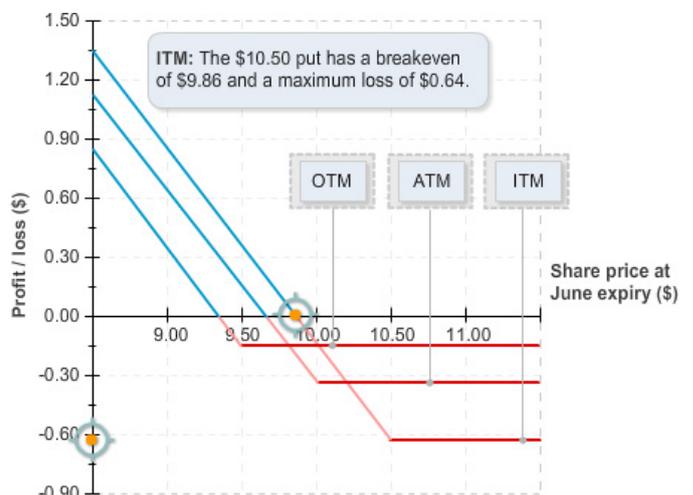
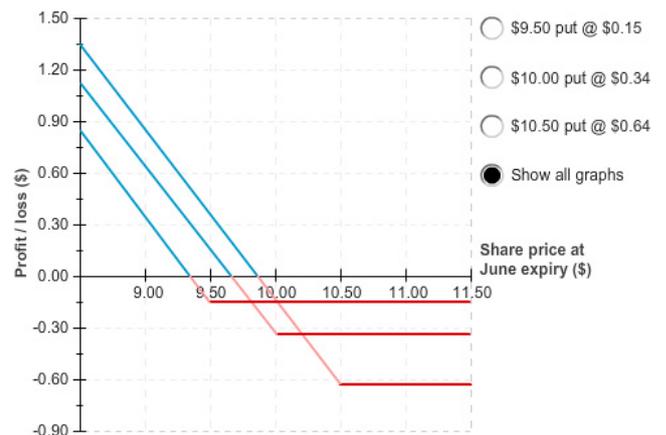
Generally, the higher the exercise price, the higher the breakeven point, and so the smaller the share price fall required for you to make a profit.

However, the higher the exercise price, the more expensive the option - and so the more you stand to lose if the share price rises.

The ITM option requires the smallest fall in the share price (\$0.14) to breakeven, but if the share price rises, you have the most at risk.

The OTM option is the cheapest - but it needs a share price fall of \$0.65 to breakeven. To buy this option, you must be extremely bearish.

The ATM option requires a move of \$0.34 to breakeven. Its premium (\$0.34) is between the \$9.50 and \$10.50 put in cost.



Although the \$10.00 ATM put is not the most expensive, it has the most time value. If the share price stays steady, the ATM option will result in the biggest loss.

How bearish are you?

In selecting the exercise price, ask yourself:

- how bearish you are, and
- how much premium you are prepared to pay.

The more bearish you are, the more you can consider the OTM option. If the share price falls significantly, this option provides the most leverage.

If you are only moderately bearish, you may prefer the ATM or ITM option, as a smaller share price fall is needed for the option to break even.

The OTM option is the cheapest, as it has the lowest chance of breaking even. You pay more for the ATM and ITM options - but have a better chance of making a profit.



Calculating your profit/loss

When buying the put, you don't know what the share price will be at expiry.

However, you can calculate what your profit/loss will be, given any share price.

At expiry, your option will be worth intrinsic value, the difference between the share price and the exercise price (intrinsic value is never less than zero). Time value will be zero.

Profit/loss = intrinsic value - the premium you paid.

If you bought the 1000 Put @ \$0.34, and at expiry the share price is \$9.37:

$$\text{Profit} = (\$10.00 - \$9.37) - \$0.34 = \$0.29.$$

	Profit/loss if share price at expiry:		
	\$9.10	\$9.55	\$10.20
XYZ \$10.50 Put @ \$0.64	\$0.76	\$0.31	-\$0.34
XYZ \$10.00 Put @ \$0.34	\$0.56	\$0.11	-\$0.34
XYZ \$9.50 Put @ \$0.15	\$0.25	-\$0.15	-\$0.15

Expiry month

An option has a limited life, and the price fall you are looking for must take place by expiry - so you need to choose an expiry month that gives you enough time.

A longer term option gives you more time for the stock price to fall significantly and has lower time decay in its early life.

However, the longer the term, the more the option will cost you due to its greater time value. As well as increasing the amount at risk, the higher premium also lowers the breakeven point - the share price must fall that much further before you make a profit.

Expiry month selection becomes a trade-off between the length of time you need for your strategy to succeed, and the cost of the option.

XYZ \$10.00 put		
Expiry month	Option premium	Breakeven point
June	\$0.34	\$9.66
July	\$0.42	\$9.58
August	\$0.48	\$9.52

Topic 4: Exiting the position

In the previous topic, we looked at your profit/loss if you maintain your option position until expiry.

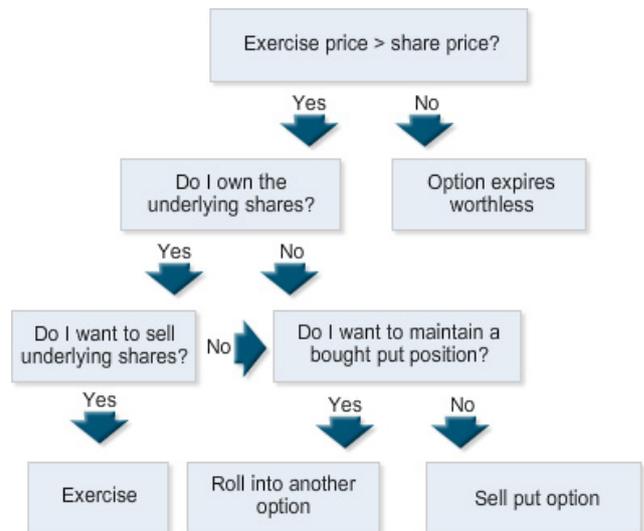
However you don't have to hold your position until the option expires.

Once you have bought your put, you have a choice:

- Close out your position by selling the option
- Exercise the option
- Roll your position

As exercising a put requires you to deliver the underlying shares, you would not consider this unless you hold the shares.

Your alternatives are to sell the option, or roll your position. Unless you take one of these courses of action before expiry, the option will expire worthless.



Sell your option

You can close out your position by selling the equivalent amount of options on the market at any time.

Assume you have bought the June \$10.00 put @ \$0.34.

After two weeks:

- the share price has fallen from \$10.00 to \$9.50
- your option has increased in value to \$0.59 (\$0.50 intrinsic value and \$0.09 time value).

You believe the share price is unlikely to fall further, and want to take profits.

Selling the option gives you a profit of \$0.25.

If you decide to maintain your position, you may increase your profit, but you also take

You can sell your option before expiry to take profits.



the risk that the share price will rebound.

What if the share price has remained steady or risen, and your option has lost value?

You can:

- maintain your position in the hope the share price falls, or
- sell the option to limit your loss.

Assume after two weeks the share price is \$10.25, and your option has fallen to \$0.20.

You change your view, and now think the share price is likely to keep rising.

Selling the option results in a loss of \$0.14.

Although the decision to take a loss can be a difficult one, if you take no action and the share price remains strong, your option may expire worthless.



What if I need more time?

With expiry approaching, you may believe your market view is correct, but you need more time.

In these circumstances you can roll your position.

Rolling means closing your existing position and simultaneously opening another position with a later expiry and/or different strike price.

Assume you have bought the June \$10.00 put @ \$0.34.

A few days before expiry

- the shares are at \$9.80
- your option is worth \$0.22.

You believe the shares have further to fall, but you need more time. You roll your position by:



- selling your June \$10.00 put for \$0.22 to close, and
- buying a July \$10.00 put for \$0.38 to open

The roll costs you \$0.16 (\$0.38 - \$0.22).

A roll may be done for a net debit (you pay money), or a net credit (you receive money).

If the put you roll to is worth more than the one you are rolling out of, the roll may be done for a net debit. This will be the case if you are rolling to the same, or a higher strike.

If the put you are rolling to is worth less than the one you are rolling out of, the roll will be done for a net credit. This may be the case if you are rolling to a lower strike (though a roll to a lower strike will sometimes be done for a debit).

You can get a rough idea of what you can roll for by looking at the current prices for the two options.

The premium you pay or receive, and the exercise price of the option you roll into, affects your breakeven point.

Rolling a bought put position usually moves the breakeven point lower - the share price must fall further for you to make a profit.

In the example, your new breakeven is \$9.50:

$$\text{New exercise price} - \text{total premiums paid} = \$10.00 - (\$0.34 + \$0.16) = \$9.50.$$

When considering a roll, be objective. Ask yourself if extra time is really what you need - or whether your initial view has proven incorrect. Committing more funds to an unsuccessful strategy may simply increase your losses.

Rolling a bought put		
Premium of option rolling out of	Premium of option rolling into	Net credit / debit
\$0.25	\$0.37	\$0.12 debit
\$0.42	\$0.30	\$0.12 credit
\$0.53	\$0.73	\$0.20 debit



Summary

When to use the bought put

In any option strategy, you need to consider not just share price movements, but also the effects on the option of time decay and changes in volatility.

Buying a put reflects a view that:

- the share price will fall. The lower the share price falls, the more the put will be worth at expiry.
- implied volatility will rise. Higher volatility leads to higher option prices. Increased volatility is also consistent with a view that there will be a significant fall in the share price.

Time decay works against the taken put.

Profits and losses

The most you can lose when you buy a put is the premium paid.

The lower the share price falls, the greater your profit. Your potential profit is limited only by a fall in the share price to zero - the profit at this point is the exercise price less the premium paid.

Your profit at expiry is the intrinsic value of the put less what you paid for the option.

Your breakeven point is the exercise price less the premium paid.

Option prices used in this module

Practical examples of option strategies are given throughout this module.

Option prices used in the examples were calculated using a binomial pricing model.

Unless specified otherwise, prices are based on the following:

- Underlying stock price: \$10.00
- Volatility: 25%
- Risk free interest rate: 6%
- Days to expiry: 52
- The stock does not go ex-dividend during the life of the option

Keeping these assumptions constant in all examples should make it easier to compare the different strategies presented.