



London
Stock Exchange

FLEXIBILITY THAT CAN DELIVER MAGNIFIED RETURNS

Covered warrants - an in depth guide





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gear up with covered warrants ...but stay in control

Introduction

A covered warrant is a financial product that gives the holder the right, but not the obligation, to either buy (call) or sell (put) an underlying asset at a predetermined price (exercise price) on or before a certain date in the future (expiry date).

Covered warrants are traded on the London Stock Exchange (the Exchange) and are issued by some of the world's leading financial institutions. Based on a variety of underlying assets including individual shares, baskets of shares, indices, commodities and currencies, covered warrants offer investors a whole range of investment opportunities.

Covered warrants are able to provide the investor with a number of different applications. These include: the ability to hedge themselves in either a rising or falling market; the potential to enhance returns on an existing portfolio in static market conditions; gain exposure in a rising or falling market at a fraction of the cost of dealing in the underlying asset, and at the same time limiting any potential losses to a fixed amount – in other words to the amount of the initial investment.

Basic terms

Call and put covered warrants

There are two basic types of covered warrants, known as calls and puts.

A call covered warrant gives the buyer (holder) the right, but not the obligation, to buy (to take delivery of) the underlying asset (from the issuer) on or before expiry day, at a pre-determined price (exercise or strike price).

A put covered warrant gives the buyer (holder) the right but not the obligation to sell (deliver) the underlying asset (to the issuer) on or before expiry day, at a pre-determined price (exercise price).

Premium of the covered warrant

The price paid for the covered warrant in the market is termed 'premium'. The holder of a covered warrant pays the premium because obtaining a right to either sell or buy the underlying asset has value. A premium is paid for both call and put warrants.

Underlying assets

Covered warrants can be issued on a variety of underlying assets, for example, individual shares, a basket of shares or a sector, currencies, commodities and stock indices.

Rights of the holder

The holder of a covered warrant has the right to either buy (call) or sell (put) to the issuer an underlying asset. This means that the holder is under no obligation to make or take delivery of the asset should the holder decide it is not in their interest to do so.

If it is not in the investor's interest (ie not profitable to do so) the covered warrant can be abandoned or traded back prior to expiry and the maximum loss on the position is limited to the premium paid for the covered warrant. The mechanics of exercise are explained later, for the investor does not necessarily have to 'buy' the underlying again. For example, in the case of covered warrants settled for cash at expiry, the profit can be automatically transferred to the holder.

Obligations and the issuer

The issuer or writer of the covered warrant is a financial institution which has a legally binding obligation to either make or take delivery of the underlying asset (or cash settle – see physical versus cash settlement for more detail) only if the holder of the covered warrant decides to exercise the covered warrant. The holder of the covered warrant pays a premium to the issuer in order to acquire the covered warrant in the first instance.

Exercising a covered warrant

Covered warrants have a fixed exercise price, which is the price at which the holder can either 'buy' or 'sell' the underlying asset. The exercise price is stated in advance in the terms of the covered warrant. If profitable to the investor, they will receive either cash or physical assets (as stated in the covered warrant conditions) and issuers can initiate automatic transfers of profit to the warrant holder at expiry.

Expiry day

Covered warrants have a finite lifespan which ends at a pre-determined date in the future (expiry day). This is the last day on which exercise of the underlying asset may take place.

American and European style covered warrants

A covered warrant may be issued as either American or European in style.

American style covered warrants allow the holder the right to exercise at any time right up until expiry day. European style covered warrants only allow the holder to exercise on the expiry day. This difference is less significant as covered warrants can be bought or sold throughout their lifetime and only under very rare circumstances would early exercise be advisable.

Physical versus cash settlement

A covered warrant may be structured in such a way that when the holder exercises, the issuer is either obliged to make or take delivery of the actual asset or settle in cash. In practice, the holder may receive cash if the covered warrant can be exercised profitably at expiry. The gain achieved on the covered warrant is transferred to the holder without the holder having to enact a buy or sell trade. In reality, all existing covered warrants are cash settled for convenience and this is likely to remain so. Examples of both physical and cash settled covered warrants can be found later in the brochure.

Conversion ratio/parity

When a covered warrant is issued, it has a conversion ratio (also known as parity). The conversion ratio describes how many covered warrants are needed to obtain exposure to one unit of the underlying asset. For example, a 3:1 call covered warrant on ABC plc means that the holder would need to exercise three covered warrants in order to acquire one share (or equivalent) in ABC plc.

Long and short positions

The holder or buyer of a call or put covered warrant is referred to as having a 'long' position. The issuer of a covered warrant is referred to as having a 'short' position.

Covered warrant dynamics

Call covered warrants

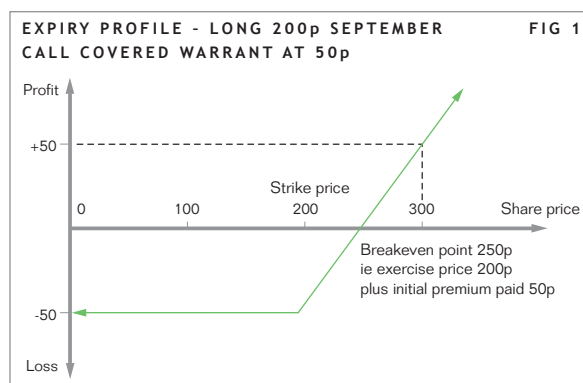
Example

Covered warrant	Call	
Issue date	March	
Issuer	XYZ Bank	
Underlying asset	ABC plc (current share price 200p)	
Conversion ratio	1:1	
Exercise style	American	
	Call exercise price	Expiry month September (premium in pence)
Covered warrant 1	100	106
Covered warrant 2	200	50
Covered warrant 3	300	34

Example of buying a 200p September call covered warrant at 50p

An investor is interested in buying a September call covered warrant, based on the expectation that the share price will rise in the future from its current level today (March) of 200p. The issuer has issued three lines of warrants on ABC plc with different strike prices. The longer the covered warrant has until expiry, the more expensive the premium will be. Also note, the higher the call exercise price, the cheaper the call premium.

If the investor buys the call covered warrant with the exercise price of 200p today (March), it will cost them 50p to own the right, but not the obligation, to buy the underlying asset. Being American style, exercise can take place at the pre-agreed price (exercise price) of 200p at any time between now and expiry day (September).



Expiry profile – long 200p call covered warrant at 50p

The horizontal axis of the graph (Fig 1) shows a series of different prices for the underlying share at expiry. The vertical axis shows whether the call covered warrant is in profit or not under different share price scenarios at expiry.

Please note, if the share price at expiry is at or below 200p, the holder of the call will abandon the call and lose the entire premium. The maximum loss, however, is always limited to the original premium outlay – in this case 50p.



Expiry of the call covered warrant

To illustrate the various outcomes at the final expiry day under different market conditions, we can refer to the following table:

Example – buy a 200p September call covered warrant at 50p today in March

Asset price at expiry	Net profit/loss at expiry	Value of 200p call at expiry
100	-50	0
150	-50	0
200	-50	0
250	0	+50
300	+50	+100
350	+100	+150

If the share price of ABC plc is at or below 200p at expiry (in September), the holder of the call covered warrant is under no obligation to exercise. After all, why buy the asset at 200p via the covered warrant, if it is only worth 100p in the underlying market?

The holder of the call in this situation would abandon the covered warrant, as it would be worthless (0p – due to the option of abandonment, a warrant cannot have a negative value). This illustrates an important point about buying covered warrants – the maximum loss to the holder of a covered warrant (call or put) is the premium, in this case 50p.

If the ABC plc share price is above 200p at expiry, the buyer of the call covered warrant could exercise their right to buy the shares at 200p from the issuer and in doing so they would be in a net profit position.

Net profit of a call covered warrant

To work out the net profit of a call, we can use the following calculation:

$$\text{asset price at expiry minus (exercise price + premium paid)} = \text{net profit}$$

If the asset at expiry was 300p, net profit would be $300p - (200p + 50p) = 50p$ profit

Breakeven point

The long call profile crosses the horizontal axis at 250p – this is called the breakeven (exercise price 200p, plus the premium 50p). If the price of the asset is above the breakeven at expiry, the call will have a net profit.

Exercise, close out or abandon

The holder of the 200p call covered warrant can exercise the right to take delivery of the share at 200p, even though the share may be worth 300p in the open market. The issuer of the call covered warrant is obliged to deliver the share at the price of 200p. The 200p call covered warrant premium at expiry, therefore, should now be worth 100p (originally 50p).

This can be illustrated another way by saying that the holder of the call covered warrant, having taken delivery of the shares at 200p, could now sell the shares immediately back in the open market at 300p at expiry, and make 100p profit (for this reason the covered warrant premium at expiry should be 100p). Let's not forget however that the covered warrant originally cost 50p, so the true net profit on the exercise is $100p - 50p = 50p$.

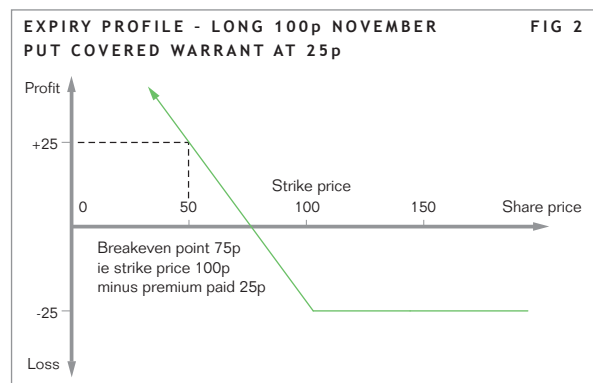
Realising a profit or loss therefore can be generated in several ways. The first is to exercise the covered warrant if American style (though this is usually unadvisable). Or, simply sell the covered warrant back to the issuer in order to close out the original purchase of the covered warrant. Nearly all users will close out their positions prior to expiry by selling back to the market rather than exercising their covered warrants. Another method is to let the covered warrant lapse worthless at expiry, ie abandon it.

If the underlying price at expiry is slightly above the strike but not above the breakeven point, the holder (in the case of calls) is still likely to exercise the covered warrant in order to minimise their loss.

Put covered warrants

Example

Covered warrant	Put	
Issue date	May	
Issuer	DEF Bank	
Underlying asset	RDST plc (current share price 100p)	
Conversion ratio	1:1	
Exercise style	American	
	Put exercise price	Expiry month November (premium in pence)
Covered warrant 1	80	10
Covered warrant 2	100	25
Covered warrant 3	120	34



Expiry profile – long 100p November put covered warrant at 25p

The long put covered warrant (see Fig 2 above) is a bearish transaction. As the price of the underlying asset falls, the put becomes more profitable. Example: Suppose an investor buys a 100p put covered warrant at 25p in order to profit from the belief that the price of the underlying asset will fall between now (May) and expiry (November). Let's also assume that the investor does not currently own the underlying asset at present.

If the asset price at expiry is 50p, the investor could exercise the right to deliver the asset. However, we stated earlier that the investor doesn't already own the asset, so how is this possible? In this situation the investor could simply buy the asset in the underlying market at expiry (50p) and sell the asset back immediately via the put covered warrant at the exercise price of 100p, making an exercise profit of 50p. However, the original 100p put premium cost was 25p, so the net profit would be $50p - 25p = 25p$. Again, it is worth noting that all covered warrants are currently cash settled so the investor would automatically receive the net value of 50p on expiry.



Please remember that, throughout its lifetime, a covered warrant can be sold back to the market and the vast majority of positions are closed out rather than held to expiry. Closing out a position in covered warrants to realise a profit or limit losses will negate all original obligations or rights. This can be done at any time right up until expiry.

Expiry of the put covered warrant

To illustrate the various outcomes at expiry under different market conditions, we can refer to the following table:

Example: Buy a 100p November put covered warrant at 25p today in May

Asset price at expiry	Net profit/loss at expiry	Value of 100p put at expiry
25	+50	+75
50	+25	+50
75	0	+25
100	-25	0
125	-25	0
150	-25	0

Net profit of put covered warrant

To work out the net profit of a put, we can use the following calculation:

(exercise price – premium paid) minus asset price at expiry = net profit

If the asset at expiry was 50p, net profit would be $(100p - 25p) - 50p = 25p$ profit.

Exercise, close out or abandon

If the underlying asset at expiry was 150p, the 100p put covered warrant would be worthless (zero premium) and there would be no reason to exercise. Prior to expiry, however, if the asset

was trading at 150p, the put covered warrant would have some value, so long as there is time remaining. Therefore the holder of the put covered warrant may wish to reduce their maximum loss (50p) by selling the covered warrant back to the issuer prior to expiry, eg 20 days prior to expiry, the 100p put is worth 5p. The put could be sold to make a net loss of $25p - 5p = 20p$.

If the covered warrant has intrinsic value (difference between exercise price and asset price) at expiry but not enough to cover the premium paid for the warrant, the holder will still exercise to minimise losses.

Bullish or bearish

We can see from the examples above that if an investor expects the underlying asset to rise (bullish) or fall (bearish) then the following long and short covered warrant positions will apply:

Market view

Bullish	Bearish
Long asset	Short asset
Long call covered warrant	Long put covered warrant

Changes in covered warrants premium

	Asset price up	Asset price down
Long call covered warrant	premium up	premium down
Long put covered warrant	premium down	premium up

Settlement

Settlement for covered warrants will be on a T+3 basis. Trading may take place up to expiry. For cash settled covered warrants, stamp duty is not payable. All covered warrants on the London Stock Exchange are cash-settled.

In, At and Out-The-Money

At any one time there may be a number of different exercise prices available for trading both call and put covered warrants. These exercise prices are often referred to as being either In, At or Out-The-Money.

Using the following table we will be able to explain the significance of these terms, and see how the covered warrant's premium changes over time. The table below shows the premium of a number of different call covered warrants at expiry with the underlying asset at 500p.

Asset price at expiry 500p

Call exercise price	400	450	500	550	600
ITM	100	50			
ATM			0		
OTM				50	100

In-The-Money (ITM)

The amount by which the covered warrant is ITM is known as its intrinsic value or inherent value. For call warrants, this means the underlying price is greater than the strike price and for put warrants, the underlying price is less than the strike price. A covered warrant is said to be ITM so long as it possesses some exercise value. For example, if the asset price is 500p at expiry, the 400p call covered warrant premium should be worth 100p.

This is because you can always buy the asset at 400p via the covered warrant (exercise it) and then sell the shares immediately at the current share price of 500p to make 100p profit. The 400p call

covered warrant is therefore said to be ITM by 100p (asset price minus exercise price). The 450p call is in the money by 50p. Please note that the net profit of a covered warrant reflects the amount the warrant is ITM minus the original cost of the covered warrant (premium).

At-The-Money (ATM)

When the underlying price is the same as the strike price, both call and put warrants are said to be ATM. The 500p call covered warrant in our example is exactly the same level as the current asset price at expiry and is said to be ATM. There would be no real value to be had from exercising the 500p call covered warrant as you could always buy the asset at 500p in the open market. The 500p call is therefore said to have no intrinsic value.

Out-The-Money (OTM)

The covered warrant is OTM when the underlying price is less than the call exercise price. For puts, when the underlying price is greater than the strike price, the covered warrant is OTM. In our example, the 550p and 600p call covered warrants are both OTM by 50p and 100p respectively at expiry. Please note, although the covered warrant is OTM by 50p and 100p, you never have negative intrinsic value. Call intrinsic value is calculated as current asset price minus call exercise price. For puts, the intrinsic value formula is put exercise price minus current asset price.

Prior to expiry – intrinsic and time value

Generally speaking, at expiry the premium of a covered warrant is equal to the amount the covered warrant is ITM (intrinsic value) or zero for ATM and OTM covered warrants. Prior to expiry, a covered warrant's premium can be broken down into intrinsic value and a further component known as time value (extrinsic value). The table below shows the current asset price in January at 500p, and below a series of March call covered warrants. The table shows the premium at the different exercise levels and how it is broken down into intrinsic and time value.

Today – share price 500p (January)

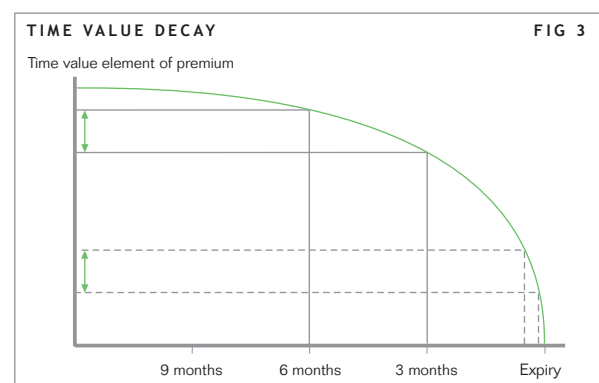
March calls					
Exercise price	400	450	500	550	600
Premium	105	70	50	25	10
Intrinsic value	100	50	0	0	0
Time value	5	20	50	25	10

Example – time value and intrinsic value

Time value varies across the exercise prices and is calculated as the difference between the premium minus the intrinsic value. Using the 400p call covered warrant with the asset currently at 500p, the intrinsic value is $(500p - 400p) = 100p$. To find out the time value we simply subtract 100p from the premium of 105p to leave a time value of 5p.

Time value and intrinsic value at expiry

At expiry, covered warrants have no time value, the covered warrant premium comprises solely of intrinsic value for ITM covered warrants and zero value for ATM and OTM covered warrants. If you buy a call or a put covered warrant, you will lose the time value element of the premium through the passage of time. The degree to which you lose time value depends upon a number of factors including the money status of the covered warrant (ITM, ATM, OTM) and how long you hold it. We will examine the concept of time value in more detail later when we look at covered warrant pricing and volatility.



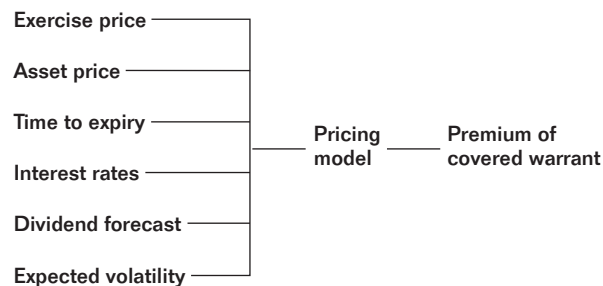
The above graph shows how the time value element of the covered warrant premium erodes in a non-linear manner over time. Note how more pronounced the decay of premium is in the last few days of the lifetime of a covered warrant.

Valuing a covered warrant

To work out the price (premium) of a covered warrant, practitioners use a mathematical pricing model. The formula in the pricing model is complicated, but the general inputs are mostly intuitive.

Working out the covered warrant premium

The price of a covered warrant is calculated by inputting the following parameters into a pricing model.



Inputs into the model that can be observed

The current underlying asset price, the exercise level and the time to expiry are easily acquired and observable in the marketplace. Dividend forecast and short term financing rates can also be regarded as known in advance, with a certain degree of confidence.

Dividends

The premium of a covered warrant will be affected by changes in the market's view of the likely dividend pay out on the underlying asset. Generally speaking the higher the expected dividend forecast the lower the premium will be for the call covered

warrant and the higher it will be for the put. And vice versa. Please note that holders of warrants are not entitled to dividends.

Interest rates

Buying a covered warrant can be likened to buying (call covered warrant) or selling (put covered warrant) the underlying asset on margin. Consequently, a rise in short term financing rates will result in a rise in the price of call covered warrants and a fall in put covered warrant, and vice versa.

Volatility

The final input into the pricing equation is volatility, which is subjective. This input is the individual issuer's view on what the distribution of future asset prices may be between now and expiry of the covered warrant. In other words, if it is expected prices will be very erratic (volatile) between now and expiry, it will mean there is a greater chance of the asset price being found at one extreme price level or another (ITM or OTM).

Example of volatility

Suppose an asset is currently trading at a price of 100p, and we expect a future volatility to be 10 per cent per annum. In one year's time we would therefore expect to see the asset trading within a range of 90p to 110p. Of course we can revise our view of volatility at any time during the lifetime of the covered warrant, and an increase in the volatility forecast to 20 per cent per annum would see the price of the asset trading at expiry within a range of 80p –120p. The market is constantly re-evaluating its view on volatility.



The volatility that is entered into the model by the issuer is termed 'expected' or 'forecast' volatility and this helps to generate a covered warrant's price. If however an issuer wishes to assess the volatility of a covered warrant with an existing market price, this can be done by reversing the calculation in the model to derive the covered warrant's 'implied' volatility, holding everything else constant.

The more uncertain we are about the direction of the asset price movements, the more expensive the covered warrant's premium will be for both calls and puts (ie the greater the volatility, the greater the covered warrant premium will be). This is because there is a greater chance of exercise occurring. A fall in expected volatility has the effect of reducing the premium, even though the underlying price may not have moved. The concept of time and volatility are intricately linked.

Covered warrant sensitivities

The covered warrant pricing model is not only useful for estimating a covered warrant price for today, but can be used to generate a series of sensitivities (delta, gamma, theta, vega, rho – known as the Greeks) which help to estimate the covered warrant's premium under various market conditions between now and expiry. A very brief explanation of these sensitivities follows, focusing on perhaps the most singularly important one – delta.

Delta

We have already seen that a covered warrant's price will rise and fall in relation to the underlying asset over time. However, the amount (ratio or delta) by which the covered warrant's price changes, depends upon whether the covered warrant is ITM, ATM or OTM. Covered warrants' deltas range from 0 to +1 for calls, and 0 to -1 for puts. The following table shows the approximate deltas for calls and puts.

	DEEPLY ITM	ATM	DEEPLY OTM
Long calls	+1	+0.5	0
Long puts	-1	-0.5	0

Example – call delta

A Deeply ITM call has a delta of 1. In other words, if the asset price rises by 10p, the covered warrant premium will rise by the same amount (10p). It has a ratio of 1:1. On the other hand, the ATM call has a delta of +0.5. If the asset rises by 10p, the new covered warrant's price according to delta will only rise by 5p.

Change in price of asset x delta = change in covered warrant premium

$$10 \times 0.5 = 5$$

Example – put delta

If we had an OTM put with a delta of -0.25, then the new covered warrant price would increase by 2.5p if the stock price fell by 10p.

Change in price of asset x delta = change in covered warrant premium

$$-10 \times -0.25 = 2.5$$

Note: Delta is very useful for estimating the change in the covered warrant value for a small change in the price of the underlying asset. However, delta has its limitations. In an environment where the asset price moves by a considerable amount, delta will either under or over estimate the real change in the value of the covered warrant's premium.

Gamma

As the underlying price changes over time, the delta of the covered warrant will also change. For example, the covered warrant may move from being currently OTM to ITM. Gamma is used to measure the rate of change of delta and, when combined with delta, will provide a more accurate indication of the estimated change in the covered warrant's premium.

Theta

As expiry approaches, the time value element of a covered warrant erodes to zero. Theta is used to measure the change in the covered warrant's premium over a given period of time.

Vega

Changes in assumptions made about the future price behaviour of an asset between now and expiry of a covered warrant can have a significant impact on the premium of the covered warrant. Vega measures the change in the covered warrant's premium for a change in expected volatility.

Rho

Rho measures the impact a change in short term interest rates has on a covered warrant position.

Gearing

The gearing of a covered warrant relates to the number of underlying units to which exposure is gained when a covered warrant is purchased. The formula is given below.

$$\text{Gearing} = \frac{\text{Price of the underlying asset}}{\text{Price of warrant x conversion ratio (parity)}}$$

Example of gearing

Assume the current price of the underlying asset is 400p and the price of a covered warrant is 20p. The conversion ratio is 2:1. Therefore the gearing on the position is:

$$\text{Gearing} = \frac{400\text{p}}{20\text{p} \times 2}$$

$$\text{Gearing} = 10$$

We can say that an investor can buy one warrant for the equivalent exposure to 10 units of the underlying asset. Covered warrants typically provide exposure to an underlying asset for less than the price of the underlying itself. Gearing therefore reflects the potential gain or loss on the warrant in relation to the underlying (an investor's maximum loss is limited to the amount of premium paid) and is calculated by dividing the price of the asset by the warrant price.

Leverage

The term leverage (also known as elasticity or effective gearing) relates to the theoretical relative per cent change in a warrant's value for a given per cent change in the price of the underlying asset. This relationship is shown below.

Leverage = gearing multiplied by delta

Assume that the underlying asset is currently trading at 400p, its gearing is 10 and its delta is 0.50. Suppose the asset price increases by 100p to 500p. The change in the warrant's price can be worked out by the following:

$$\text{Leverage} = 10 \times 0.50$$

$$\text{Leverage} = 5$$

We can say that the covered warrant's price will change by five times the amount compared to the change in the underlying asset price.

Because of the delta effect, a change in a covered warrant's price in absolute terms is generally less than the change in the price of the underlying asset. However, because of the gearing aspect, the percentage change in the price of the covered warrant is greater than the corresponding change in the underlying asset, and it is for this reason that many investors are attracted to its use.

The effect of time

There is also another consideration when investing with covered warrants, which is to do with time. For example, suppose the investor bought the 550p calls in January for a premium of 25p and saw a very slow increase in the underlying price over this period from 500p to 550p at expiry (December). The value of the 550p call covered warrants at expiry would be zero (ie there would be no intrinsic value).

The investor in our example had got the market direction correct, but the time it took to get there meant that the original premium (25p) had eroded to zero. Of course the investor could have closed out their position at any time to cut their losses, but nonetheless it illustrates how time affects the covered warrant premium.

We saw earlier on that the passage of time impacts adversely upon a long covered warrant premium – the greatest effect being on ATM covered warrants. It is not uncommon, therefore, to see a call covered warrant's premium decrease in value over time, even though the underlying price has risen. This is particularly evident with covered warrants that have just a few days remaining until expiry. Remember that the greatest time value decay occurs in the last few days of a covered warrant's lifetime. Longer dated covered warrants are less sensitive to the passage of time but they are also less sensitive to changes in the price of the underlying asset.

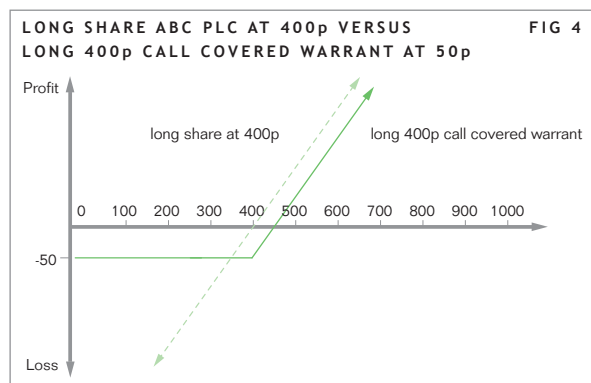
Covered warrant applications for the investor

Covered warrants have a number of useful applications for the investor. What follows is an examination of the more popular uses, covering the simple use of buying call and put covered warrants for investment purposes as well as managing an existing or intended portfolio.

Securing future access and maximum buying price – call covered warrants

Buying a call covered warrant allows an investor to secure a maximum future buying price for an asset but at the same time allows the investor to potentially acquire that asset more cheaply under certain circumstances.

Suppose an investor is interested in buying shares on ABC plc as a long-term investment. However, the investor is nervous about the short-term outlook for the share. If they buy the shares outright today at 400p (illustrated on Fig 4 as a 45 degree line), they will have unlimited profit potential as the share price rallies, but also an unprotected downside if the share price falls. The investor could of course place a stop loss with their broker. However, is there an alternative to buying the share and placing a stop loss?



Instead of buying the share outright, our investor could buy a long-dated 400p call covered warrant for 50p. This will give them the opportunity to benefit in a rising market but have a guaranteed maximum loss of 50p between now and expiry. In addition, we can assume that the remaining cash at the investor's disposal (350p) is placed on deposit to earn interest during the lifetime of the covered warrant position.

Maximum buying price – 450p

Fig 4 shows a long share position versus a long 400p call covered warrant costing 50p for comparison. Both positions will profit in a rising market. If the share price at expiry is trading at 600p, the call holder can exercise their right to buy the shares at 400p (the covered warrant is ITM by 200p) via the call covered warrant. Their effective maximum buying price for the shares in a rising market is always 400p plus the 50p premium = 450p.



The investor's net gain will be 150p, with the shares at 600p to reflect the original premium outlay. Although the call covered warrant underperforms the shares in a rising market by the extent of the premium outlay, the call covered warrant holder has a distinct advantage if the market for the shares falls dramatically.

Minimum buying price

As expiry approaches, suppose the shares fall to 100p. By way of comparison, the original shareholder might feel obliged to cut their losses, and get out of the position, losing 300p. The holder of the call covered warrant on the other hand stands to lose only the 50p premium and no more.

The holder of the call covered warrant is said to be OTM and thus abandons the covered warrant. However, they now have the opportunity to buy the shares at 100p in the underlying market, as they may feel this is a great time to own the shares at such a low price. The shares would be theirs at an effective buying price of 150p (ie 100p plus 50p original premium).

The call covered warrant in this example allows the holder to benefit in a rising market but also protects the holder's downside. In other words, the call covered warrant secures a maximum future buying price for the shares but the minimum purchase price could be considerably less.

Cash flow management – call covered warrants

Another reason for buying the covered warrant as opposed to going long of the shares, is that the investor may not have had sufficient liquid funds to buy the shares in the first place. By purchasing the call covered warrant, the investor gains immediate exposure to the market for a fraction of the actual outlay.

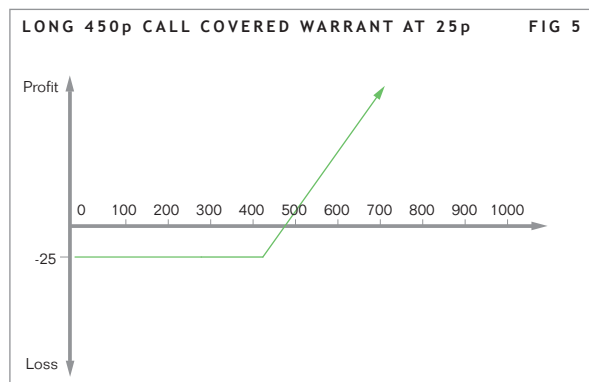
A disadvantage with buying covered warrants is that they do have a limited lifespan and time decay works against the holder as previously described. If the investor was particularly bullish of the market but didn't want to risk too much premium, they could buy an OTM covered warrant eg 450p call at 25p. The call premium will be cheaper but the underlying asset has to move higher in order for the holder to be in profit. The breakeven at expiry would be 475p as opposed to 450p.

Realising a gain on an existing portfolio and maintaining an exposure to the market – call covered warrants

An investor has seen impressive returns recently on their existing share portfolio and would like to realise some of the gains, as well as free capital for other purposes. To do this they could sell the shares today and realise their gain, but this would exclude them from any future gains if the share price continues to rise. Is there any way they could maintain an exposure to the market while securing earlier gains?

Example

To secure some of their gains and still be exposed to a rising market, the investor could sell their shares today at 400p, and buy a 450p call covered warrant at a cost of 25p. The proceeds from the sale of the shares are placed on deposit to earn interest and a small portion of the funds is used to purchase the 450p call covered warrant at 25p.



This strategy benefits from the fact that if the share does fall back dramatically, the most money the investor would lose is the premium ie 25p.

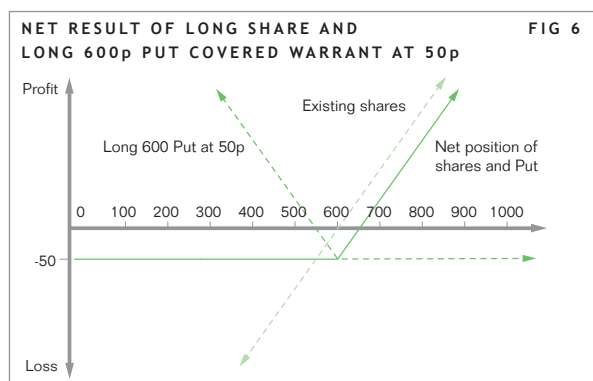
On the other hand, if the shares rose above the breakeven point of 475p (450p plus 25p), the call covered warrant would be in profit. The investor in a rising market could decide to either exercise the covered warrant and go long of the shares again, or sell the covered warrant back to the issuer to realise a cash profit.

Protecting an existing portfolio from a price fall – buy put covered warrants

Buying a put covered warrant as we have already seen is essentially a bearish strategy. Knowing this, an investor could use the put covered warrant to insure (hedge) the value of their shareholding if they suspect that share prices are likely to fall in the near term.

Example – protective put covered warrant (hedging)

An investor is concerned that their current shareholding (current share price 600p) is going to fall in the near term so decides to buy a 600p put covered warrant at 50p to protect their portfolio.



The expiry profile above shows the net position of the existing shares and the put covered warrant. We can work out how this position is derived from the following table:

Share price at expiry	Value of 600p put bought at 50p	Share value	Net position
400	150	-200	-50
500	50	-100	-50
600	-50	0	-50
700	-50	100	50
800	-50	200	150

Hedging and a share price fall

If the share price is below 600p at expiry, the existing share position will be losing money. However, as we know, the long put position profits in a falling market. If the share falls to 400p at expiry (shares lose 200p), the long put covered warrant will have value equal to the exercise price adjusted by the premium outlay, minus the share price ie $(600p - 50p) - 400p = 150p$. In other words, if the stock fell below 600p, the worst loss possible for the investor would be 50p. The investor could either sell their put covered warrant back to the issuer at expiry to realise a profit, or decide to exercise their put covered warrant and deliver the shares at the exercise price of 600p. The effective selling price would be $600p - 50p = 550p$.

Hedging and share price rises

By contrast, suppose that the price of the shares rose against expectations, what would happen then? In this situation the investor would simply

abandon their put covered warrant at expiry, and their loss would be limited to 50p – the covered warrant’s premium – and no more. This means that in a rising market the investor still has the opportunity to profit should the share price rise.

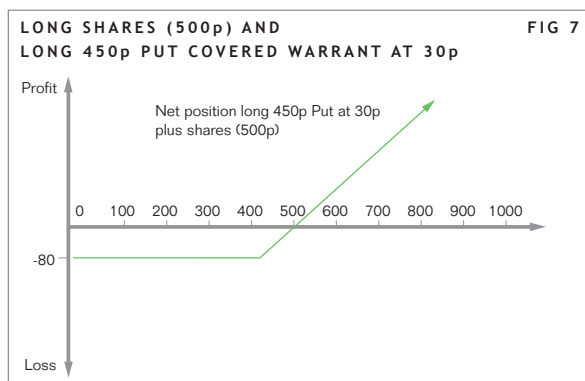
We can summarise by saying that buying put covered warrants on an existing long share position locks in a minimum future value for the shares (ie $600p - 50p = 550p$) but leaves a potentially unlimited profit potential should the share price rise.

Underwriting a share purchase – put covered warrants

An investor is keen to purchase a particular share currently valued at 500p. They expect the share to do well in the long term but, in the near term, they have concerns about its performance. The investor could tolerate a short-term fall to 420p (80p fall) but no lower. How could the investor underwrite this share purchase? The investor decides to buy the shares at 500p and also buys an OTM 450p put covered warrant at 30p.

Share price at expiry	Value of 450p put bought at 30p	Share value	Net position
0	420	-500	-80
300	120	-200	-80
400	20	-100	-80
500	-30	0	-30
600	-30	100	70
700	-30	200	170

We can see from the table that the worst loss on the combined position would be no more than 80p, which retains an effective minimum future value for the shares of 420p. On the other hand, if the shares rose in value at expiry the upside potential is related to the performance of the shares. Notice that in a rising market the combined position, relative to just owning the shares, would only underperform by the extent of the premium outlay – as shown in Fig 7.



Investing in the market direction of the underlying

Earlier on, we examined the use of covered warrants as an investment tool in connection with either being long or short of the underlying asset (or holding cash). Investors may also use covered warrants to take an outright view on the market.

An advantage of using covered warrants as opposed to trading the underlying asset is that investors can benefit from gearing, requiring a relatively small sum of money in order to gain exposure to the underlying market.

Covered warrants also allow the investor to trade a view, which is both bullish and bearish of market direction.

Bullish	Bearish
Long stock	Short stock
Long call covered warrant	Long put covered warrant

The type of covered warrant an investor chooses will depend upon how bullish or bearish they are of the underlying market.

In the following example, imagine an investor is bullish about the performance of a selection of shares based on some top European companies and wishes to speculate on this view. What should they do? Do a basket trade and buy all the Euro shares today, or buy an ITM, ATM or OTM equity index call covered warrant?



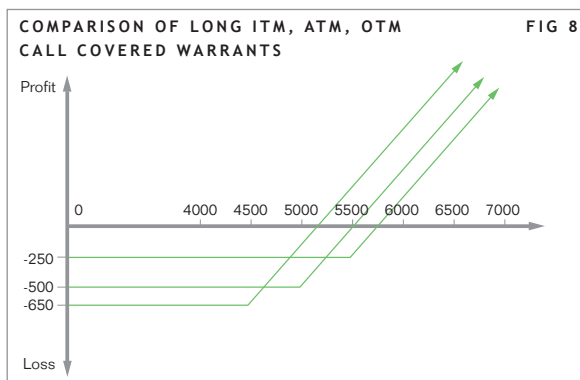
Investing on a rise – call index covered warrants

The performance of an index covered warrant is linked to the performance of the shares underlying a particular index – eg FTSE 100, FTSE 250, S&P 500 etc. The exercise price of an index covered warrant is expressed in terms of ‘index points’ and therefore has a monetary value associated with each point. This value is commonly known as the ‘index multiplier’ (see below) and is set by the issuer.

Example

Covered warrant	Call Euro Index
Issue date	January
Issuer	HIJ Bank
Underlying asset	December Euro index (current index level 5000)
Index multiplier	£0.01 (each index point is worth 1p)
Conversion ratio	100 warrants for 1 index point ie 100 covered warrants are required to gain £1 for a 1 point movement in the index (100 x 1p = £1.00)
Exercise style	American
Exercise price	December call premium (quoted in index points)
4000	1050
4500	650
5000	500
5500	250
6000	140

Let us now compare buying an ITM 4500 call for a premium of 650 index points, an ATM 5000 call for a premium of 500 index points, and an OTM 5500 call for a premium of 250 index points.



From the expiry profile Fig 8, we can observe that all of the long call covered warrants will make a profit if they are held until expiry and the underlying Euro index price exceeds 5750. It is clear that the ITM covered warrant will reach a breakeven point first at $4500 + 650 = 5150$, compared to the ATM covered warrant's breakeven of $5000 + 500 = 5500$ and the OTM breakeven of 5750.

Example of profit calculation

At an index level of 6000 at expiry, the ITM warrant (exercise price 4500), has a profit calculated as:

$$6000 - (4500 + 650) = 850$$

Convert to a cash value by:

points gained x index multiplier x no of warrants held (assume 100)

$$850 \times 0.01 \times 100 = \text{£}850$$

Because index covered warrants are cash settled, it simply means that at expiry, if the covered warrant is ITM, the issuer will pay the holder the exercise value.

Gains on the covered warrant – percentage versus real gain

The following table shows the percentage returns versus real term gains and losses for the three covered warrants at expiry.

Stock price at expiry	ITM 4500 at 650		ATM 5000 at 500		OTM 5500 at 250	
	p/l	%	p/l	%	p/l	%
4000	-650	(-100)	-500	(-100)	-250	(-100)
4500	-650	(-100)	-500	(-100)	-250	(-100)
5000	-150	(-77)	-500	(-100)	-250	(-100)
5500	+350	+54	0	0	-250	(-100)
6000	+850	+130	+500	+100	+250	+100
6500	+1350	+208	+1000	+200	+750	+300
7000	+1850	+284	+1500	+300	+1250	+500

The table above illustrates a number of important points for the investor. If a call covered warrant is OTM at expiry, you will lose the whole of your original premium. For example with the underlying asset at 4000 at expiry, all three covered warrants lost 100 per cent of their premium. In real value terms, the ITM call lost the most (ie 650 versus 500 versus 250 points).

If all of the covered warrants are ITM at expiry, they all make a profit. In absolute terms the ITM covered warrant always makes the most. However, the higher the underlying asset price is at expiry, the greater the percentage return will be for the OTM covered warrant. We can see that the OTM call made a dramatic 300 per cent return with the underlying asset at 6500 at expiry, compared to the ATM of 200 per cent and ITM of 208 per cent.

Therefore, if an investor is very bullish of asset prices, they could choose an OTM covered warrant as this will give them the greatest percentage return for their money. If, on the other hand, the investor is only mildly bullish, they could choose either the ATM or ITM covered warrant.

Careful consideration then needs to be given when choosing a covered warrant exercise price and expiry date. The investor needs to have a view not only on the direction and magnitude of the movement of the underlying asset but also the timing of the move.

Closing out

In our example we looked at holding the December covered warrants until expiry. In reality there is nothing to stop the investor from closing out their covered warrant by trading it back to the issuer at anytime between now and expiry, either to realise an early profit or limit their losses.

Investing on a fall – put index covered warrants

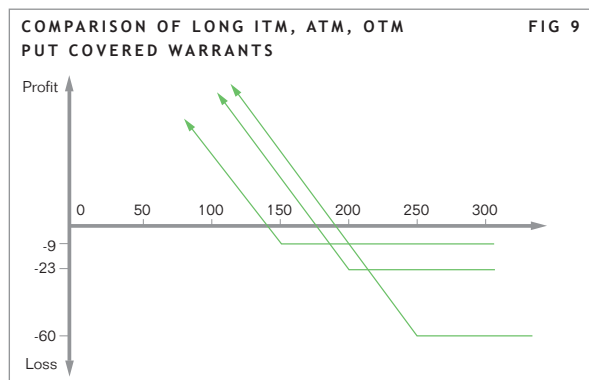
Put covered warrants offer individuals an easy opportunity to trade a bearish view on the market, recalling that a long put covered warrant gives the holder a right but not the obligation to deliver the underlying asset on or before expiry day (or settle for cash).

Comparatively, trading a bearish view in the underlying stock market is really only possible if you can go short of the stock with an agreement to buy it back later on. This is an expensive process and one which is really only offered to the professional trader.

Current situation

ABC plc	December (200p)
Put covered warrant	
Exercise price	
March	Premium in index points
150	9
200	23
250	60

The underlying stock is currently priced at 200p. The following graph shows an ITM 250 put at 60, an ATM 200 put at 23 and an OTM 150 put at 9.



We can see from the graph above that all three positions will be in profit at expiry (December) if the underlying share is below 141. The March covered warrant breakeven point for put covered warrants is calculated as the exercise price minus the premium paid. The ITM put breakeven point is $250 - 60 = 190$, the ATM breakeven is $200 - 23 = 177$, and the OTM breakeven is $150 - 9 = 141$.

In a falling market, the ITM put covered warrant makes the most profit in real terms, but in percentage terms this is not necessarily the case as we discovered earlier when we looked at the call covered warrant example. The following table shows the percentage returns versus real term gains and losses for the three put covered warrants at expiry.

Puts

Stock price at expiry	ITM 250 at 60		ATM 200 at 23		OTM 150 at 9	
	p/l	%	p/l	%	p/l	%
300	-60	(-100)	-23	(-100)	-9	(-100)
250	-60	(-100)	-23	(-100)	-9	(-100)
200	-10	(-17)	-23	(-100)	-9	(-100)
150	+40	+67	+27	+117	-9	(-100)
100	+90	+150	+77	+334	+41	+450

Depending upon the extent of the movement in the underlying share price, the greatest profit/loss in real terms versus percentage gains and losses will vary. As with call covered warrants, if an investor is aggressive in their views about the movement of the underlying share (extent of fall in case of puts) they will prefer OTM covered warrants. If they are more modest in their forecast, they could choose ATM or ITM covered warrants.

Investing in covered warrant price movements using calls

An investor believes that the Euro index (in January) currently priced at 5000 is likely to rise in the next few weeks. They wish to profit from this view. They can either buy the actual shares today (and place a stop loss order with their broker at 4500) and hope to sell it back in a few days at a profit or they could buy a call covered warrant. The investor decides they are only mildly bullish so elects to buy a 5000 call covered warrant at 500 today with the intention of closing it out (sell the covered warrant back) prior to expiry.

Outcome – index at 6000

After eight weeks, the Euro index price has risen to 6000, an increase of 1000 points. The return to the investor if they had bought the actual shares originally at 5000, and sold them back at 6000, would be 20 per cent, ignoring spreads, commissions, dividends and taxes. The expected value of the 5000 call covered warrant, with the index at 6000 is assumed to be worth 1470 (ie 1000 intrinsic value and 470 time value). If the investor was to sell the call covered warrant back to the issuer, they would make a return of 194 per cent ($1470 - 500 = 970$).

For a small outlay, the covered warrant has generated a very large return compared to the investor who decided to trade the actual underlying shares. In fact, had the investor originally bought the 6500 call for 50, we could expect the premium to be 220 with the index at 6000. The return would be 340 per cent.

Summary of covered warrant characteristics

Gearing – taking exposure to an underlying for lower outlay, and obtaining proportionally greater returns or losses.

Volatility – a change in expected volatility will also have an affect upon the covered warrant premium. As volatility increases, both call and put covered warrant premiums will increase. As volatility decreases, call and put covered warrant premiums will decrease.

Limiting risk – investing with long call covered warrants allows a trader to gain exposure to a rising market for limited risk. The investor can choose from a range of different exercise prices to reflect their degree of bullishness, but also the time horizon in which this move will take place.

Potential risks of covered warrants

- Although the gearing element magnifies potential returns, it can also magnify losses (however, loss is limited to initial investment).
- The limited lifespan of the covered warrant means the time to expiry affects the price of the covered warrant. This may mean investors will want to monitor the covered warrants frequently, especially if held nearing expiry.
- The time limits on covered warrants mean that if an investor's expectation of the price of the underlying is realised after the warrant expires, they will not be able to benefit as the warrant no longer has validity.



Glossary

Abandon

The choice made by the holder of a covered warrant to allow it to expire without exercise.

At-The-Money (ATM)

A covered warrant is At-The-Money when the strike price is the same, or very close to, the price of the underlying. It applies to both call and put warrants.

American style

An American style covered warrant allows the holder to exercise the covered warrant at any time on or before the expiry date.

Basket

A portfolio consisting of more than one security that may or may not replicate an index. For example, a share or equity basket is one that contains shares in more than one company.

Call

A covered warrant that gives the holder the right, but not obligation, to buy the underlying assets on or before the expiry date, at a specified price.

Cash settlement

The investor receives cash if the covered warrant can be exercised profitably at expiry. The gain achieved on the warrant is transferred to the holder without the holder having to enact a buy or sell trade.

Conversion ratio/parity

This ratio is the number of covered warrants that must be held and exercised in buying or selling a single unit of the asset eg one share. A higher conversion ratio will produce a lower covered warrant price.

Leverage

Sometimes called elasticity. It measures the theoretical increase/decrease in the price of a covered warrant (in percentage terms) based in a one per cent move in the underlying asset.

European style

A European style covered warrant is one that may only be exercised on the last trading day.

Exercise

The process of using the right to buy or sell the underlying at the specified price.

Expiry date

The day on which the covered warrant may no longer be exercised or traded.

Gearing

Covered warrants typically provide exposure to an underlying for less than the price of the underlying itself. Gearing therefore reflects the greater potential gain or loss on the covered warrant in relation to the underlying (though the loss is limited to the amount of premium paid), and is calculated by dividing the price of the underlying by the covered warrant price.

Hedge

A hedge is typically accomplished by making offsetting transactions that will largely eliminate one or more types of risk.

Holder

The owner of the covered warrant.

In-The-Money (ITM)

For a call covered warrant, this is where the strike price is less than the price of the underlying. For a put covered warrant, this is where the strike price is greater than the price of the underlying.

Intrinsic value

The difference between the exercise price and the market price of the asset.

Long

A long position is when someone buys (holds) a covered warrant or holds the underlying asset. Contrasts with short position.

Out-The-Money (OTM)

A covered warrant is out-the-money when it has no intrinsic value.

Physically settled

Settlement of a covered warrant by the delivery or receipt of an actual underlying asset. This contrasts with cash settlement, where no delivery of an underlying physical asset takes place just a cash difference.

Premium

A term used to describe the price paid for a covered warrant.

Put

A covered warrant that gives the holder the right to sell the underlying asset at a future date and specified price before the expiry date.

Short

A term used to describe a position which involves the sale of an asset or covered warrant. Contrasts with long position.

Stock-settlement

The covered warrant holder receives the underlying if the warrant can be exercised profitably at expiry. This applies to physically-delivered covered warrants only.

Strike price

The price at which the investor may buy or sell the underlying during (if American style) or at the end of the expiry period (if European style). Also referred to as 'expiry price' and 'exercise price'. It is known when the covered warrant is issued.

Time value

Time value is the intrinsic value subtracted from the premium. Time value represents the remaining value that has been attributed to the warrant by the market, and the fact that the market might move before the expiry date.

Underlying

The asset on which the covered warrant is based and derives its value. The underlying may be a security (such as shares), a share index (eg FTSE 100), a commodity or a currency. Some warrants are based on a 'basket' of underlyings, which gives an investor exposure to the performance of more than one security.

Volatility

A measure of the amount of movement in the price of an instrument.

Writer

The issuer of a covered warrant, i.e. the seller, is sometimes referred to as the writer.

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