

Option Trading Strategies

Options are one of the most powerful financial tools available to the investor. A large part of the power of options is only apparent when several options are traded and combined together to create an options and stock portfolio. By combining options positions investors can create unique payoffs (often at very little cost) by combining positions of bought and sold options.

Option trading strategies have fancy names like “bear spreads”, “condors” and “butterflies”. Option strategies have complex mathematical relationships driving their value. The jargon and mathematics of options trading all too often scares away the average investor from exploring the power of options. Even if you are not planning to invest using options in the near future this leaflet will hopefully be of interest to you as you get a glimpse of the fascinating potential of options.

1. The Long Straddle

A very popular strategy in the South African Derivatives Market is the Straddle. A straddle trade is usually done by someone who expects a big move in a certain stock but is not sure of the direction of the move.

A straddle consists of 2 trades: buying an At The Money (ATM) Call, and buying an At The Money Put. At The Money means where the market is trading e.g. if the stock is trading at R100, both your put and your call will be at R100 strikes.


This is quite an expensive strategy, as you are paying 2 option premiums. However, your loss is limited to these 2 premiums, and the potential profit is theoretically unlimited. Essentially, the strategy allows you to be both long and short at the same time. This is also known as a Long Volatility trade: because you have both a call and a put, you are indifferent to the direction of the market movement but you are hoping for a significant move (very volatile stock).

The investor buys 1 ATM (spot) call contract and buys 1 ATM (spot) put contract. He uses the JSE Black-Scholes calculator to calculate the premiums he will pay buying the above options. *(In the window below the Futures price is filled in as the spot price as we have left the dividend yield and risk free rate at 0.)*

By purchasing the R100 strike Put contract the investor pays: R6.05 per share * 100 shares = R 605

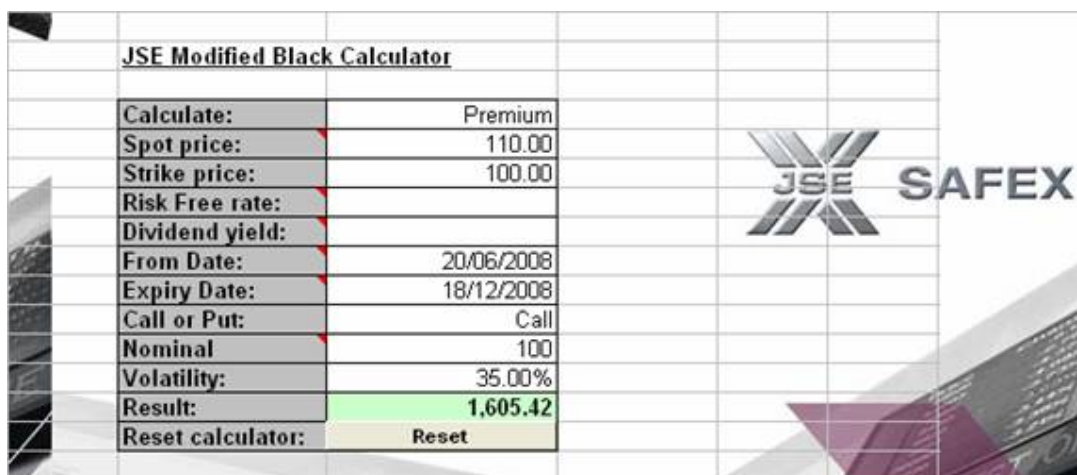
1. Buying ATM Put at R100 strike

JSE Modified Black Calculator	
Calculate:	Premium
Spot price:	110.00
Strike price:	100.00
Risk Free rate:	
Dividend yield:	
From Date:	20/06/2008
Expiry Date:	18/12/2008
Call or Put:	Put
Nominal	100
Volatility:	35.00%
Result:	605.42
Reset calculator:	Reset



Secondly he buys a R100 strike price Call contract.

2. Buying the ATM Call with a R100 Strike



JSE Modified Black Calculator	
Calculate:	Premium
Spot price:	110.00
Strike price:	100.00
Risk Free rate:	
Dividend yield:	
From Date:	20/06/2008
Expiry Date:	18/12/2008
Call or Put:	Call
Nominal	100
Volatility:	35.00%
Result:	1,605.42
Reset calculator:	Reset

The Call contract costs him R16.05 per share * 100 shares = R1,605

Basically there are 3 potential outcomes from this strategy:

1. The share price at the December close out is between R77 and R122

Only one of the options is exercised however it is not enough to offset the premiums he paid.

Total premium paid: R605 + R1605 = R2,210

Break even points= R100 + R22.80 = R122.80

And R100 - R22.80= R77.20

At R77 and at R122, his profits on the Put leg and the Call leg respectively, are just enough to cover the premiums he paid. In between these points, he is losing money, with the maximum loss occurring when the stock price is at R100. When the stock price is R100, both his options are Out The Money and he loses both premiums paid.

2. The share price has risen above R122

Thus the Call he bought is In The Money.

Example: The futures price at closeout is R170.

His call allows him to buy the stock at R100, and sell it on at R150 in the market.

He pays: R100 * 100 shares = R10,000

He sells them in the market at R170 * 100 shares = R17,000

He has made a profit of R7,000

His options cost him R2,210

His net profit is: R7,000 - R2,210 = R4,790

This is a profit of 216%

3. The share price falls below R77

Thus the Put he bought is In The Money.

Example: The futures price at closeout is R35.

His put allows him to sell the stock at R100, and buy it at R35 in the market.

He sells his shares and makes: R100 * 100 shares = R10,000

He buys them in the market at R35 * 100 shares = R3,500

He has made a profit of R6,500

His options cost him R 2,210

His net profit is: R6,500 - R2,210 = R4,290

This amounts to a 194% profit!

The above trade is only one of a multitude of amazing results that can be achieved through combining the buying and writing of options. The straddle allows you to effectively bet on both sides: provided the change is significant, you will make a profit regardless of the direction the market moves in. This is an opportunity exclusive to the world of options.

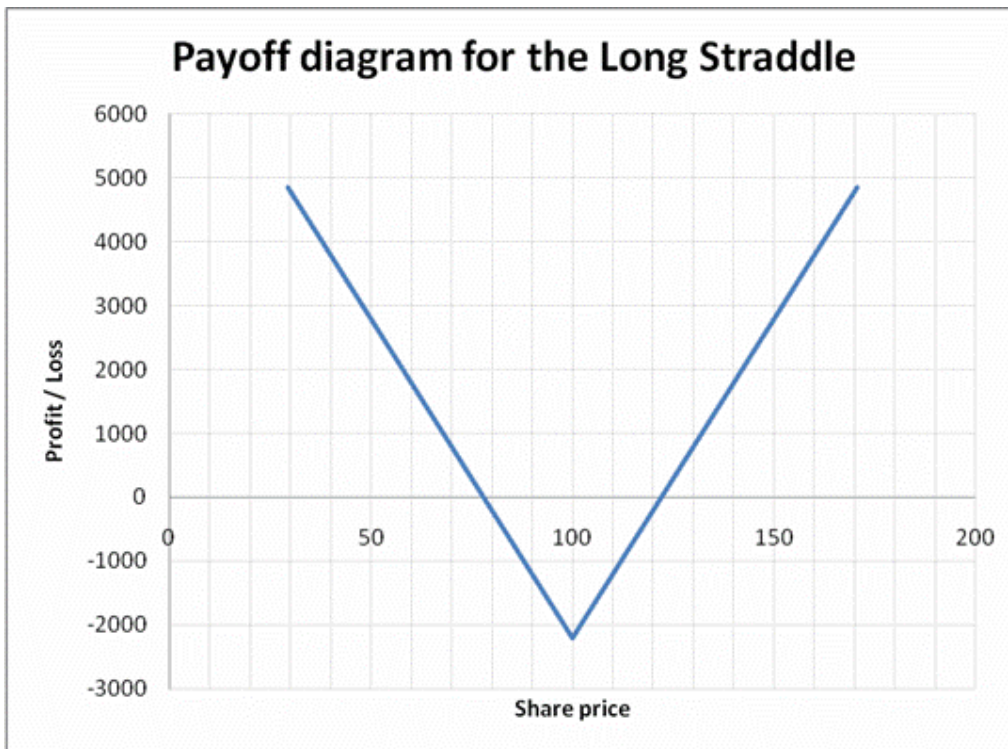
The table below indicates 3 potential outcomes for his strategy. The columns at the top indicate the share price on closeout and the rows indicates the different option trades making up the long straddle:

Option trades	Premium Paid	Closeout Share price between R77 & R122	Closeout Share price above R116.80: At R170	Closeout Share price below R83.20: At R35
ATM Call	R1,605	Only one option is In The Money, but the profit is not enough to compensate for the premiums paid	Exercised. Buys 100 shares at R100 and pays R10,000. Sells 100 shares in the market at R170 and receives R17,000	Not exercised. Lost premium R2,210
ATM Put	R605		Not exercised. Lost premium R605	Exercised. Sells 100 shares at R100 and receives R10,000. Buys 100 shares in the market at R35 and pays R3,500
Total Profit/Loss	R2,210	A loss between R0 and R2210	$R17,000 - R10,000 - R605 - R1,605 = R4,790$	$R10,000 - R3,500 - R605 - R1,605 = R4,290$
Summary			Made a profit of 216%	Made a profit of 194%

Payoff diagram

A visual way of understanding the potential economic effects of options is through payoff diagrams. A payoff diagram is relatively easy to understand once how to interpret them has been explained to you. The options payoff diagram for a long stock or futures position is shown below. The Y- Axis represents the investors profit or loss, and the X- axis shows the stock price which increases from left to right.

The payoff diagram shows the value at expiry of the straddle strategy. It shows that the maximum loss occurs when the share price does not move at all. It also shows that the upside is potentially unlimited if there is a significant move of the underlying share price in either direction. This strategy is ideal near the top of a bull market or for a company whose prospects are increasingly uncertain. Another potential way to profit is that both option positions increase significantly in value if the implied volatility used to value them increases. Often, the trader will be able to sell both options before expiry at a profit due to this increased volatility.



2. The Long Strangle

A Strangle trade is similar to a straddle trade. It is usually done by someone who expects a big move in a certain stock but is not sure of the direction of the move. The strangle is more aggressive than the straddle because the stock needs to make a bigger move in order for you to profit.

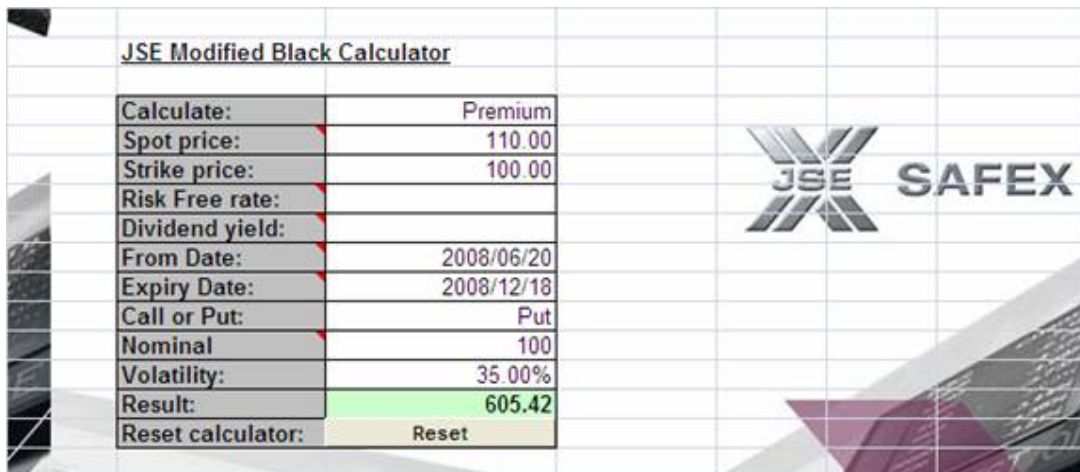
A strangle consists of 2 trades: buying a slightly Out The Money (OTM) Call, and buying a slightly Out The Money Put. Out The Money means that as it stands, your options will incur a loss. For example, if the share price is R110, then a R100 Put and a R120 Call are Out The Money.

This is a costly strategy, as you are paying 2 option premiums. But these premiums are much lower than those of ATM options, as we saw with the straddle. Your loss is limited to these 2 premiums, and the potential profit is theoretically unlimited. Like the straddle, this strategy allows you to be both long and short at the same time.

The investor buys 1 OTM call contract and buys 1 OTM put contract. He uses the JSE Black-Scholes calculator to calculate the premiums he will pay buying the above options.

The investor purchases a R100 strike Put contract which costs R6.05 per share * 100 shares = R 605

1. Buying OTM Put at R100 strike




JSE Modified Black Calculator	
Calculate:	Premium
Spot price:	110.00
Strike price:	100.00
Risk Free rate:	
Dividend yield:	
From Date:	2008/06/20
Expiry Date:	2008/12/18
Call or Put:	Put
Nominal	100
Volatility:	35.00%
Result:	605.42
Reset calculator:	Reset

Secondly he buys a R120 strike price Call contract.

2. Buying the OTM Call with a R120 Strike

JSE Modified Black Calculator	
Calculate:	Premium
Spot price:	110.00
Strike price:	120.00
Risk Free rate:	
Dividend yield:	
From Date:	2008/06/20
Expiry Date:	2008/12/18
Call or Put:	Call
Nominal	100
Volatility:	35.00%
Result:	697.06
Reset calculator:	Reset



The Call contract will cost him: R6.97 per share * 100 shares = R697

There are 4 potential outcomes from this strategy:

1. The share price at the December close out is between R100 and R120

He loses the total premium paid: R605 + R697 = R1,302

2. The share price is between R84 and R100, or between R120 and R136

Only one option is In The Money, but the profit is insufficient to cover the total premium paid. At R84 and R136, his profit on the In The Money contract is equal to the total premium he paid, so his net profit is R0. These are known as breakeven points.

3. The share price falls below R84

The Put he bought is In The Money.

Example: The futures price at closeout is R35.

His put allows him to sell the stock at R100, and buy it at R35 in the market.

He sells his shares and makes: R100 * 100 shares = R10,000

He buys them in the market at R35 * 100 shares = R3,500

He has made a profit of R6,500

His options cost him R1,302

His net profit is: R6,500 - R1,302 = R5,198

This amounts to a profit of almost 400%!

4. The share price rises above R136

The call he bought is In The Money.

Example: The futures price at closeout is R170.

His call allows him to buy the stock at R120, and sell it on at R170 in the market.

He pays: R120*100 shares = R12,000

He sells them in the market at R170 * 100 shares = R17,000

He has made a profit of R17,000 – R12,000 = R5,000

His options cost him R1,302

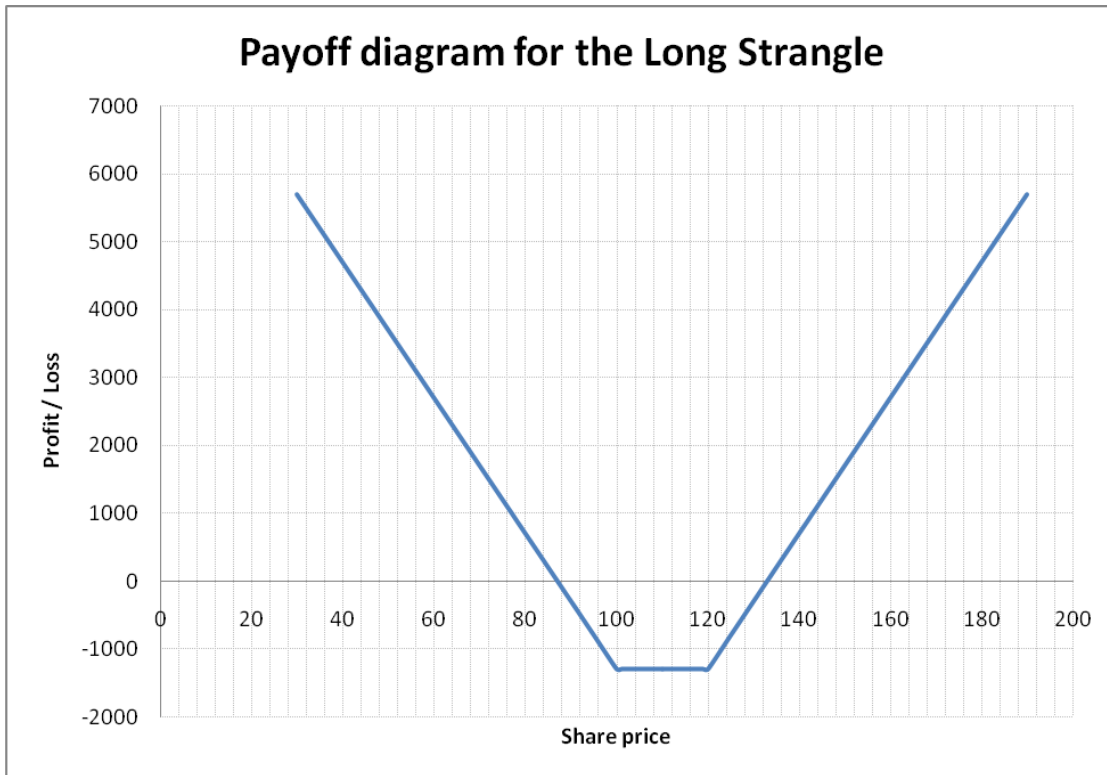
His net profit is: R5,000 - R1,302 = R3,698 or 284% profit!

The table below indicates the 4 potential outcomes for his strategy. The columns at the top indicate the share price on closeout and the rows indicates the different option trades making up the long strangle:

Option trades	Premium Paid	Closeout Share price between R100 & R120	Closeout Share price between R84 & R100 or between R120 and R136	Closeout Share price below R84: At R35	Closeout Share price above R136: At R170
OTM Call	R697	Both options expire worthless and he loses the premiums paid.	Only one option is ITM but the profit is not enough to offset the total premium paid. At R84 and R136, his net profit is zero.	Not exercised. Lost premium R697	Exercised. Buys 100 shares at R120 and pays R12,000. Sells 100 shares in the market at R170 and receives R17,000.
OTM Put	R605			Exercised. Sells 100 shares at R100 and receives R10,000. Buys 100 shares in the market at R35 and pays R3,500	Not exercised. Lost premium R605
Total Profit/Loss	R1,302	A loss of R1,302	Loss of up to R1,590, or zero profit (at breakeven points).	$R10,000 - R3,500 - R697 - R605 = R5,198$	$R17,000 - R12,000 - R697 - R605 = R3,698$
Summary				Made a profit of almost 400%	Made a profit of 284%

Payoff diagram

The payoff diagram below shows the value at expiry of the strangle strategy. It shows that the maximum loss occurs when the share price is between R100 and R120. Observe that the upside is potentially unlimited if there is a significant move of the underlying share price in either direction. Like the straddle, this strategy is ideal near the top of a bull market or for a company whose prospects are increasingly uncertain. Another potential way to profit is that both option positions increase significantly in value if the implied volatility used to value them increases. Often, the trader will be able to sell both options before expiry at a profit due to this increased volatility.



3. The Momentous Flexible Fence^[1]

A Fence trade is another popular strategy in the South African Derivatives market. This trade is usually done by someone who already owns a certain stock which has increased in price and he wants to lock in some of the gains and lessen the risk of loss.

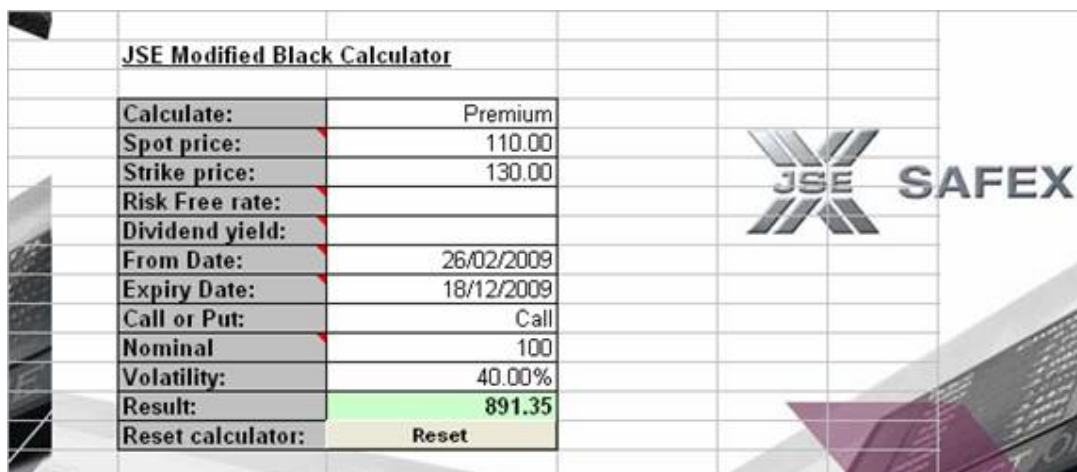
In our example the investor holds stock in AAA Corporation which is trading at R100. The investor bought the stock at R80 and has held it for 2 months. Market conditions are now less favourable so he decides to use a fence to protect and enhance his returns.

A fence consists of 3 trades. Selling a far out the money Call, selling a far out the money Put and using the proceeds from option writing to buy a slightly out the money or At the Money Put.

The investor sells 1 Call contract at R130 strike price and the futures price is R110. He uses the JSE Black-Scholes calculator to calculate the premiums he will pay and receive for buying and writing the above options.

The investor sells the R130 strike Call contract and receives: R8.91 per share * 100 shares = R 891. He is happy to sell at R130 as he feels the share will be overpriced if it reaches that level.

1. Selling the Out The Money call at R130 strike




JSE Modified Black Calculator	
Calculate:	Premium
Spot price:	110.00
Strike price:	130.00
Risk Free rate:	
Dividend yield:	
From Date:	26/02/2009
Expiry Date:	18/12/2009
Call or Put:	Call
Nominal	100
Volatility:	40.00%
Result:	891.35
Reset calculator:	Reset

Secondly he sells an R80 strike price Put contract. At R80 he feels happy to buy another 100 shares as he feels AAA Corporation is a great company with good future prospects.

^[1] For an in depth look at fence structures for professional investors or derivatives students please refer to "The Momentous Flexible Fence" 2007, by Dr Daniel Polakow, Anthony Seymour and Yvonne Greyling of Peregrine Securities.

2. Selling the Out-the-Money Put with an R80 Strike

JSE Modified Black Calculator	
Calculate:	Premium
Spot price:	110.00
Strike price:	80.00
Risk Free rate:	
Dividend yield:	
From Date:	26/02/2009
Expiry Date:	18/12/2009
Call or Put:	Put
Nominal	100
Volatility:	40.00%
Result:	344.44
Reset calculator:	Reset




He sells the Put contract and receives R3.44 per share * 100 shares = R344.44

Next he buys a Put contract at R100 strike price to protect his position and hold on to all the gains he has made thus far.

3. Buying the At The Money (spot) Put at R100 strike

JSE Modified Black Calculator	
Calculate:	Premium
Spot price:	110.00
Strike price:	100.00
Risk Free rate:	
Dividend yield:	
From Date:	26/02/2009
Expiry Date:	18/12/2009
Call or Put:	Put
Nominal	100
Volatility:	40.00%
Result:	1,049.97
Reset calculator:	Reset



Now let's look at the effects of these 3 transactions on the position.

For the Call and the Put contract that he sold, he has received: $R344 + R891 = R1,235$

The Protective Put he bought has cost him R1,050

Thus with this strategy he has at inception made a profit of $R1,235 - R1,050 = R185$.

By changing his various strike prices a wide variety of outcomes could have been achieved. The above R185 on R100 shares would be equal to R1.85 per share of extra profit he has locked in by using the fence options strategy.

There are 4 potential outcomes from this strategy:

1. The share price at the December close out is between R100 and R130

None of the options is exercised and he has made a 1.85% extra return on his stock.
R1,235 premium in
Less R1,050 premium out
Equals R185 profit from premiums of the 2 sold options and he still has the stock.

2. The share price has risen above R130

Thus triggering the Call he sold.
He sells 100 shares at R130 = R13,000
His premium income is R185
So his profit from initiation of the fence = R3,185

3. The share falls to R70 so both his Put options are in the money

He exercises his R100 strike Put option which allows him to sell his shares:
At R100 per share * 100 shares = R10,000
His premium income is R185
Profit = R10,185

Secondly the R80 strike Put Option that he sold is exercised and he must now buy back his stock for
R80 per share * 100 shares = R8,000

Thus he's received R10,185
And paid out R8,000 for the 100 shares
Profit = R2,185 – R1,000 = R1,185 from the strategy's inception and he still has his stock

He has lost R1000 on the stock's fall as he could buy it at R70 in the market not R80. This loss does not bother him as he believes that at or beneath R80 the stock is cheap and he is a confident value buyer.

4. The share price has declined slightly to R90

The investor exercises his R100 strike put option and sells his stock
At R100 per share * 100 shares = R10,000
Plus the R185 for the option writing strategy effectively equal a selling price of R10,185. Since he bought the stock at R80 he is very happy with this outcome.

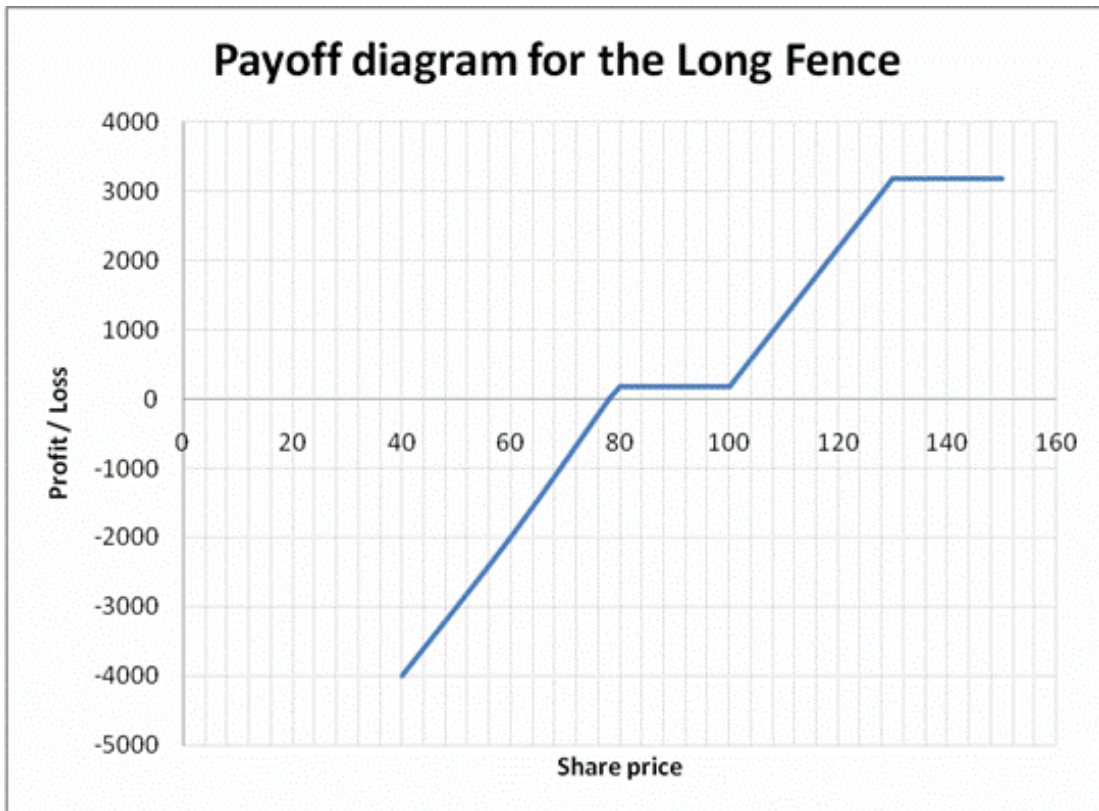
This example shows option strategies can protect the value of your portfolio and enhance returns significantly whilst reducing risk. With the fence strategy, the investor has been paid R185 to protect the current value of his shares for the first 20% of downside and to enhance his returns!

The table below indicates 3 of the 4 potential outcomes for his strategy. The columns at the top indicate the share price on closeout and the rows indicate the different option trades making up the flexible fence:

Option trades	Premium Paid/Received	Closeout Share price between R100 & R130	Closeout Share price R130 or more	Closeout Share price is R70
Sold R130 Call	R891	Not exercised. Made premium R891	Exercised. Sells 100 shares at R130 and receives R13,000	Not exercised. Made premium R891
Sold R80 Put	R344	Not exercised. Made premium R344	Not exercised. Made premium R344	Exercised. Buys 100 shares at R80 and pays R8,000
Buys R100 Put	R1,050	Not exercised. Lost premium R1,050	Not exercised. Lost premium R1,050	Exercised. Sells 100 shares at R100 and receives R10,000
Total Profit/Loss	R185	$R891 + R344 - R1,050 = R185$	$R13,000 - R10,000 + R891 + R344 - R1,050 = R3,185$	$R10,000 - R8,000 + R891 + R344 - R1,050 - R1,000 = R1,185$
Summary		1.85% and he still owns the stock	Sold the stock but still made R185 profit more than if he sold naked	Still owns the stock and made R1,185

Payoff diagram

The image below is the options payoff diagram for a long stock or futures position and the fence options overlay, showing the value at expiry of the fence strategy. The inflection points are where the option strikes are. When the stock price is below R80, the R80 Put option he sold obliges him to buy the stock at R80. Below this point he is losing money. Further along, the next inflection point is his R100 strike price Put option which allows him to sell his stock at R100 per share if the market falls beneath it. The next inflection point to the right where the line goes flat is his sold call at R130 strike price.



Timeline

