

Options

Call option

Put option

Option contract – 100 shares of stock

Option contract:

- 1) Underlying security
- 2) Strike or exercise price
- 3) Expiration date
- 4) Contract size
- 5) Exercise style
- 6) Delivery or settlement procedure

American option

European option

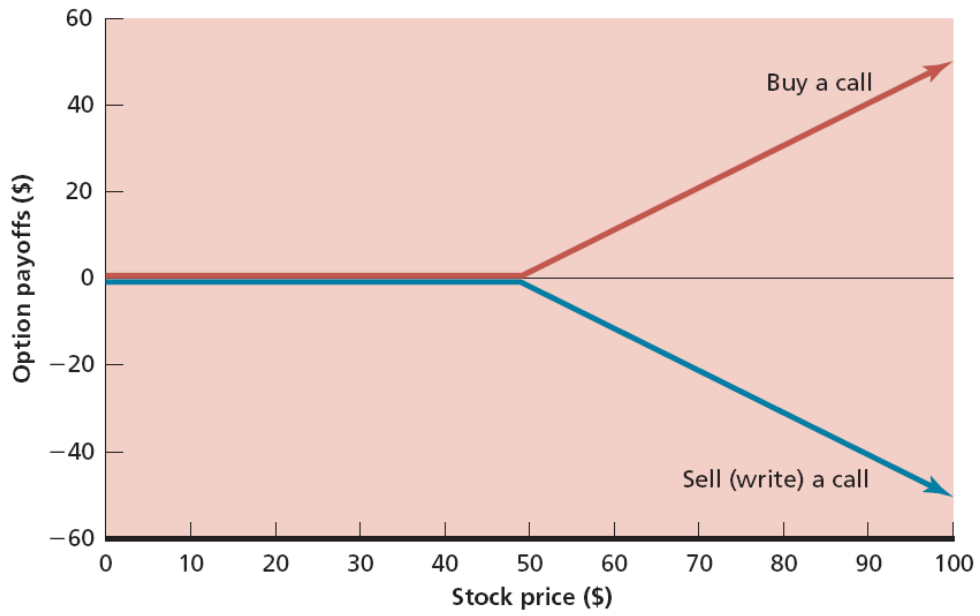
Selling an option – writing an option

Option Quotes

View By Expiration: [Jan 09](#) | [Feb 09](#) | [Apr 09](#) | [Jul 09](#) | [Jan 10](#) | **Jan 11**

CALL OPTIONS		Expire at close Fri, Jan 21, 2011					
Strike	Symbol	Last	Chg	Bid	Ask	Vol	Open Int
5.00	VMFAA.X	16.06	↑ 1.76	15.55	16.05	50	10
7.50	VMFAU.X	12.85	0.00	13.15	13.60	4	35
10.00	VMFAB.X	11.20	↑ 0.05	11.05	11.45	1	993
15.00	VMFAC.X	7.79	↑ 0.24	7.60	7.85	5	1,229
17.50	VMFAW.X	6.41	↑ 0.41	6.15	6.40	222	555
20.00	VMFAD.X	5.21	↑ 0.26	5.05	5.15	255	3,243
22.50	VMFAX.X	4.00	↑ 0.05	3.90	4.00	11	3,801
25.00	VMFAE.X	3.00	0.00	2.98	3.05	41	7,577
30.00	VMFAF.X	1.67	↑ 0.02	1.62	1.71	121	3,094
35.00	VMFAG.X	0.83	↓ 0.06	0.83	0.87	21	23,560
40.00	VMFAH.X	0.42	0.00	0.35	0.41	80	271
45.00	VMFAI.X	0.23	0.00	0.14	0.19	10	147
50.00	VMFAJ.X	0.10	↓ 0.02	0.06	0.10	10	327

Option Payoffs



Call payoff = $\text{Max}[0, S - X]$

Put payoff = $\text{Max}[0, X - S]$

Option Strategies

Protective Puts – Also called “stock price insurance”.

1) Buy a put on a stock you own.

	$S_T < X$	$S_T > X$
Stock	<hr/>	
Put	<hr/>	

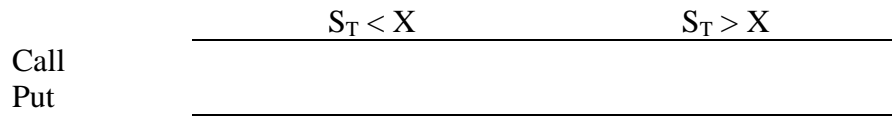
Covered Call

1) Write a call on a stock you own.

	$S_T < X$	$S_T > X$
Stock	_____	
Call	_____	

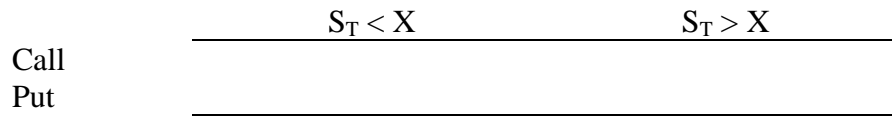
Long Straddle

- 1) Buy a call at X_1
- 2) Buy a put at X_1



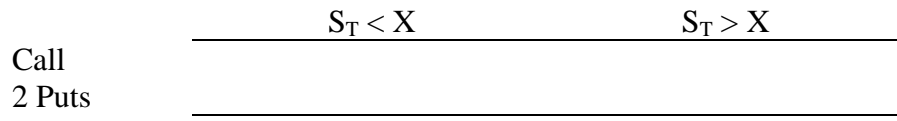
Short Straddle

- 1) Sell a call at X_1
- 2) Sell a put at X_1



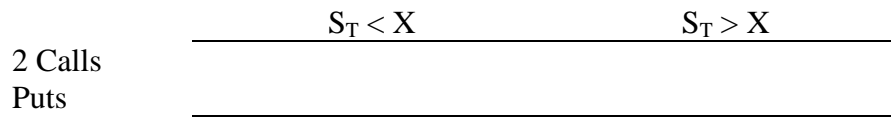
Strip

- 1) Buy a call at X_1
- 2) Buy 2 puts at X_1



Strap

- 1) Buy 2 calls at X_1
- 2) Buy a put at X_1



Strangle

- 1) Buy a call at X_2
- 2) Buy a put at X_1

	$S_T < X_1$	$X_1 < S_T < X_2$	$S_T > X_2$
Call	<hr/>		
Put	<hr/>		

Spreads (Collars) – 2 or more options of the same type**Bull Spread with calls**

- 1) Buy a call at X_1
- 2) Sell a call at X_2

NOTE: $X_2 > X_1$

	$S_T < X_1$	$X_1 < S_T < X_2$	$S_T > X_2$
Long call	<hr/>		
Short call	<hr/>		

Bull Spread with puts

- 1) Buy a put at X_1
- 2) Sell a put at X_2

NOTE: $X_2 > X_1$

	$S_T < X_1$	$X_1 < S_T < X_2$	$S_T > X_2$
Long put	<hr/>		
Short put	<hr/>		

Bear Spread with calls

- 1) Buy a call at X_2
- 2) Sell a call at X_1

	$S_T < X_1$	$X_1 < S_T < X_2$	$S_T > X_2$
Long call	<hr/>		
Short call	<hr/>		

Bear Spread with puts

- 1) Buy a put at X_2
- 2) Sell a put at X_1

	$S_T < X_1$	$X_1 < S_T < X_2$	$S_T > X_2$
Long put	<hr/>		
Short put	<hr/>		

Butterfly Spread with calls

- 1) Buy a call at X_1
- 2) Buy a call at X_3
- 3) Sell 2 calls at X_2

NOTE: $X_2 = \frac{1}{2}(X_1 + X_3)$

	$S_T < X_1$	$X_1 < S_T < X_2$	$X_2 < S_T < X_3$	$S_T > X_3$
Call @ X_1				
Call @ X_3				
2 short calls @ X_2				

Butterfly Spread with puts

- 1) Buy a put at X_1
- 2) Buy a put at X_3
- 3) Sell 2 puts at X_2

NOTE: $X_2 = \frac{1}{2}(X_1 + X_3)$

	$S_T < X_1$	$X_1 < S_T < X_2$	$X_2 < S_T < X_3$	$S_T > X_3$
Put @ X_1				
Put @ X_3				
2 short puts @ X_2				

Box Spread (really a combination)

- 1) Buy a call at X_1
- 2) Buy a put at X_2
- 3) Sell a call at X_2
- 4) Sell a put at X_1

	$S_T < X_1$	$X_1 < S_T < X_2$	$S_T > X_2$
Long call @ X_1			
Long put @ X_2			
Short call @ X_2			
Short put @ X_1			

Exotic Options

Asian options

Barrier options

Down and out

Down and in

Up and out

Up and in

Lookback option *payoff is high (or low) price of asset minus strike price over the option's life*

Currency translated

Binary options

Package

Bermuda options

Forward start

Compound options

Chooser option

Shout option

Rainbow options