

VERTICAL SPREADS

Construction of a Vertical Spread

A vertical spread is constructed by the purchase of a call (or put) and the sale of a call (or put) in the same stock and in the same month. The only difference between the two options is the strike price. For instance, a vertical spread can be constructed by purchasing the IBM June 55 call while selling the June IBM 60 call. This trade would be called the IBM June 55 - 60 call spread. Similarly, a purchase of the IBM July 45 put and sale of the IBM July 60 put would be called the IBM July 45 – 60 put spread.

The key to the construction of vertical spreads is that you choose the options that are in the same stock, same month, but different strikes and in a 1 to 1 ratio. That is, you must purchase one option for every one you sell or sell one option for every one you buy.

Value and the Vertical Spread

A vertical spread's maximum value is the difference between the two strikes. For example, the maximum value of the June 55 – 60 call spread is \$5.00. $[60 - 55] = \$5$.

Spread	Difference between strikes	Spreads maximum value
August 35 - 40 call	5	\$5.00
April 70 – 85 put	15	\$15.00
Nov. 20 – 22.5 call	2.5	\$2.50
Dec. 40 – 50 put	10	\$10.00
Jan 60 – 80 call	20	\$20.00

Using the June 55 – 60 call spread example, we will set the date to June expiration on Friday. On that day, all the June options will expire and the options will be worth parity, as all of the extrinsic value will have eroded away.

Where does the spread get its value? Basically, from its two components - the call (or put) you buy or the call (or put) you sell. Let's look at the spread's value with a couple of different closing stock prices. If the stock closes at \$55, then both the 55 strike and the 60 strike will be out of the money and thus worthless. The value of the spread will be zero as both options are worth \$0. If the stock closes at \$57.50, the June 55 calls will be worth \$2.50. The June 60 calls will be out of the money and thus worthless, therefore the spread will be worth \$2.50 (June 55 call \$ 2.50 – June 60 call \$0).

If the stock closes at \$60.00, then the June 55 calls will be worth \$5.00. Meanwhile, the June 60 calls will be worth \$0. This means that the spread will be worth \$5.00 (June 55 call \$ 5.00 - June 60 call \$0). This is the maximum value of the spread. Note that the maximum value is identical to the difference between the strikes.

As the stock goes higher, the June 60 call becomes in-the-money and gains intrinsic value. Now, for every penny that the stock increases in value, the June 55 calls and June 60 calls gain value equally, keeping the \$5.00 spread between the two strikes constant. To see this, refer to the Table below.

Stock Price	June 55 call Value	June 60 call value	Spread
55	0	0	0
56	1	0	1
57	2	0	2
58	3	0	3
59	4	0	4
60	5	0	5
61	6	1	5
62	7	2	5
65	10	5	5
70	15	10	5
100	45	40	5

The difference between the strikes is the maximum value of all vertical spreads irregardless of the distance between the two strikes. It does not matter whether the spread is \$5.00 wide, \$10.00 wide, \$20.00 wide, or even \$50.00 wide; its maximum value is the difference between the two strikes. Further, the vertical spread's maximum value (the difference between the two strikes) holds true for vertical put spreads as well as vertical call spreads. Look at our other example, the July 45 – 60 put spread.

Again we set time forward to Friday, July expiration. We set the stock closing price at \$60.00. At \$60.00, both the July 45 puts and the July 60 puts will be out of the money and thus worthless. With both the July 45 puts and July 60 puts worthless, the spread is also worthless (July 60 put \$0 – July 45 put \$0). If the stock finishes at \$52.50, then the July 60 puts will be worth \$7.50 while the July 45 puts will still be worthless. In this scenario the July 45 – 60 put spread will be worth \$7.50 (July 60 puts \$7.50 – July 45 puts \$0). If the stock finishes at \$45.00, then the July 60 puts will be worth \$15.00 while the July 45 puts will be worth \$0.

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At this level, the spread will be worth \$15.00 (July 60 puts \$15.00 – July 45 puts \$0). This is the maximum value of the spread. As you can see it is identical to the \$15.00 difference between the strikes.

As the stock goes lower, the July 45 puts become in-the-money and gain intrinsic value. Now, for every penny that the stock decreases in value, the July 60 puts and the July 45 puts will gain value equally, keeping the \$15.00 spread between the two strikes constant. To see this, refer to the table below.

Stock Price	June 60 put Value	July 45 put value	Spread
65	0	0	0
62	0	0	0
60	0	0	0
57	3	0	3
55	5	0	5
50	10	0	10
47	13	0	13
45	15	0	15
42	17	2	15
40	20	5	15

As stated, the maximum value of a vertical spread is the difference between the two strikes while the minimum value of the spread is, of course, \$0. This means that in this strategy, both the buyer and the seller have a limited, fixed maximum loss. The buyer can only lose what he spent. So, if the buyer spent \$2.20 to purchase the August 35 – 40 call spread, the most he can lose is the \$2.20 he spent.

For the seller, the maximum loss is the difference between the maximum value of the spread (difference between the strikes) and the amount of money received for the sale of the spread. For example, if you were to sell the August 35 – 40 call spread for \$2.20 then your maximum loss will be \$2.80. Remember, the maximum value of the spread is the difference between the two strikes or \$5.00 (40 – 35).

The difference between the maximum value of the spread (\$5.00) and the amount the seller received for the sale (\$2.20) leaves a \$2.80 maximum loss. Below, the chart shows the potential amount of money, both profit and loss, that can be made or lost by both the buyer and the seller.



Closing Stock Price	August 35-40 Call Spread Price	August 35-40 Call Closing Price	Buyer P & L	Seller P & L
30	2.20	0	-2.20	+2.20
32	2.20	0	-2.20	+2.20
34	2.20	0	-2.20	+2.20
35	2.20	0	-2.20	+2.20
36	2.20	\$1.00	-1.20	+1.20
37	2.20	\$2.00	- .20	+ .20
38	2.20	\$3.00	+ .80	- .80
39	2.20	\$4.00	+1.80	-1.80
40	2.20	\$5.00	+2.80	-2.80
42	2.20	\$5.00	+2.80	-2.80
44	2.20	\$5.00	+2.80	-2.80
46	2.20	\$5.00	+2.80	-2.80
48	2.20	\$5.00	+2.80	-2.80
50	2.20	\$5.00	+2.80	-2.80

In conclusion, it is important to understand and remember that vertical spreads have both a limited profit and a limited loss scenario for both the buyer and the seller.

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