

## Long Calendar Spreads

**Strategy Description:** This is one of the basic spread positions that is used by traders of all experience levels, and is a component of more complex spreads. Calendar spreads feature low capital requirements, zero margin, defined-risk, opportunities to collect premium from rolling short front month options forward, and wide profit ranges. Calendar spreads, also referred to as "Time Spreads" or "Horizontal Spreads", can be positioned to speculate on market direction or as a market-neutral strategy that profits from time decay. The trader simply picks the strike price they believe the underlying will close at the expiration of the near term option and the trade profits as we move through time. Calendars are designed to collect the **THETA** decay of the short option in the spread while maximizing the time value of the longer term option.

**Position Structure:** A long Calendar spread is the simultaneous sale of a near (front) term call or put and the purchase of a far (back) term call or put of the same strike price. The long and short options in a Calendar spread are either both calls or both puts.

Long Call Calendar:     Short Sept. 50 Calls     Long Oct. 50 Calls

Long Put Calendar:     Short Sept. 45 Puts     Long Oct. 45 Puts

The following table will help you understand the value of trade #1 (above): a long call calendar spread at September expiration.

<b>Sell to Close the Sep.-Oct. 50 Call Calendar Spread at September Expiration</b>					
<b>Stock Price</b>	<b>Buy September 50 Calls</b>		<b>Sell October 50 Calls</b>		<b>Total Value</b>
	Intrinsic Value	Time Value	Intrinsic Value	Time Value	
40	0	0	0	.40	.40
45	0	0	0	.80	.80
<b>50</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2.50</b>	<b>2.50</b>
55	-5	0	+ 5	.80	.80
60	-10	0	+10	.40	.40

Note the following:

- The time value of an option is the highest when it is at-the-money (50). Therefore, the Calendar spread is worth the most money when it closes at-the-money (50) of the near term short option.
- The Calendar spread will be worth the most money the stock is at the same price of the strike selected (50) at expiration of the near term (Sept.). This is when the near term option expires and has no time value left and the far term (Oct.) is at-the-money with one full month left.
- The calendar spread is worth approximately the same if the selected strike closes an equal distance in-or-out-of-the-money. Note if the stock is at 45 or at 55 at expiration, the spread is worth the same (.80).
- If, in the example in the table above, we paid \$0.80 for this Calendar spread we can see that we will profit if the stock is between 45 and 55 at expiration of the near term option.
- Since both options use the same strike prices, any intrinsic value will be the same for both and will cancel each other out because one option you are buying and the other option you're selling. This is shown above at the stock price of 55 and 60, you can only make money on time value.

**Maximum Profit:** The maximum profit is realized on a Calendar spread when the underlying price settles at the strike price of the short option at expiration. In that case, the front month option expires worthless, and the back month long option has the greatest time (extrinsic) value as it is

the at-the-money option. If the underlying price doesn't settle exactly at the strike price, any intrinsic value would be cancelled out because both options have the same strike price.

When a Calendar spread is purchased and there is more than one month separating the short and long options, the profit of a Calendar spread can be augmented by "rolling" the short front month option to the next expiration month for a credit. Rolling is the process of buying back the short option near expiration and simultaneously selling the next expiration month's same strike option. For example, if you buy a Sep/Dec call Calendar spread, there are two rolls "embedded" in the Calendar spread. You can roll the short Sep call to Oct, and later roll the short Oct call to Dec. The rolls have the greatest value when the underlying price is right at the strike price (making it the at the money option). This permits you sell the next month option for the greatest amount of time value (at the money options carry the most time value). The value of the calendar spread depends on its implied volatility, expiration date, and movement of the underlying which all change over time. Therefore, it is difficult to quantify precisely the maximum profit of a Calendar spread. *thinkorswim* provides a theoretical option pricing calculator wherein relatively accurate estimates of Calendar Spread profit potentials can be achieved. By changing several variables affecting a calendar roll's value in a theoretical model, you can get a good idea of the roll value, and a detailed understanding of this strategy's potential profit. It's best to be conservative when applying theoretical variables in the determination of future credits you will receive.

**Maximum Loss:** Calendar spreads are executed for debits, and the maximum loss on a Calendar spread is the original debit (cost) of putting on the trade, plus commission. Maximum loss occurs when the underlying price has moved far away from the strike price of the Calendar spread and the long back month has \$0 extrinsic value.

**Break-even points:** The break-even points of a Calendar spread are the points above and below the Calendar spread's strike price that the underlying can close at the expiration of the near term option where far term option's time value is equal to the amount paid for the spread. It is highly recommended to utilize the *thinkorswim* pricing model to determine break-even points.

**Capital Requirement:** The capital requirement for a long Calendar spread is simply the net dollar value of the long option premium, minus the short option premium, plus commissions: the debit of the Calendar spread plus commissions.

**Candidates:** This strategy can be used on a broad range of stocks and indices.

**Execution:** It is best to place calendars spreads as one trade and routed at the mid-price.

### Long Calendar Spread Entrance Criteria:

1. The Calendar spreads that have the best probability of making money are those with at least one roll embedded in them (that is, with a month in between the expiration months of the short and long options). **Traders Notes: AVIOD volatility skews** of more than 5% between front and back month options as this can dramatically diminish a retail customer's probability of success in any calendar spread. Typically volatility skews will be observed before an equity earnings announcement or a major news related event. Market Makers have distinct advantages in any equity with a Volatility Skew.
2. The combined open interest of front month options should be at least twenty times the number of Calendar spreads you want to do.
3. Select the expiration month of the near term short option that gives you between 4 and 10 weeks from expiration but we do not sell front month options. Example: if a trader is currently in the June expiration cycle they would be looking to sell July options. This action is taken to collect enough short premium as to provide delta protection against the long term option we are intending to buy in the calendar spread.
4. The expiration month for the far term long options will usually be the next available month after the expiration month of the near term options, as dictated by its expiration cycle. Some traders when using Calendar spreads on equities or indices prefer to skip a month or two between the long and short options to give themselves roll opportunities, (i.e. Sep/Nov or Sep/Dec). Having roll opportunities are beneficial when one feels the underlying price will stay near the selected strike for a longer period of time as with indices. The long option in the calendar spread however should not exceed 150 days from expiration. **Note:** New or inexperienced traders may be better off employing one month Calendar spreads that have no roll opportunities as to "get a feel" for roll values before committing more capital.
5. Pick the strike price of the Calendar spread by selecting the strike that is nearest to where you believe the stock will close at the expiration of the near term short options. Calendar Spreads can be viewed as **Target Trading** as we are attempting to choose where the underlying will fall just prior to the expiration of the short option. **Traders Notes:** Calendar spreads can be utilized in numerous situations however it is imperative that the trader have a "comfort level" or "intimate feel" with the underlying selected as a candidate. Calendars are again most profitable when a trader can select a strike price they believe the underlying will fall just prior to the expiration of the short option in the spread. Calendars in equity products therefore require a "feel" for the underlying price movement. Many experienced traders elect to utilize products such as ETF's or indices as they primarily trade within defined ranges.
6. Utilize puts calendars if the strike you selected is below the current stock price and select call calendars if the strike you selected is above the current stock price. If the trader is intending to achieve market neutrality (flat deltas) an at the money calendar spread can be place with either calls or puts. **Traders Notes:** At the Money Call Calendars spreads can be significantly more expensive than At the Money Put Calendars as current interest rates add a "cost of carry" to the long calls in the spread. Therefore, traders tend to use put calendar spreads for at the money calendar as to lower our entrance cost and risk into the position.
7. In the case where you are evaluating a Calendar spread with roll opportunities, check the value of the rolls (one-month Calendar spreads) for the strike of the Calendar spread, and


for the two strikes above and below the strike of the Calendar. This will indicate how much credit you might receive when you roll the short front month option forward if the underlying price stays where it is or moves up or down by a couple strikes. If the estimated value of the rolls embedded in the Calendar spread is close to or greater than the debit of the Calendar spread, you have a good candidate. That will give you a chance to recoup the cost of the Calendar spread through its rolls.

8. **Analyzing Roll Values:** The thinkorswim client application is capable of estimating what a calendar spread is theoretically worth in a selected calendar spread. The follow is a reference guide in utilizing the industry's most advanced theoretical pricing model:
  - a. Go to the thinkorswim TRADE TAB, enter an equity or index of interest and open the option chains of the months you are considering for the calendar spread.
  - b. In the upper right hand corner of the TRADE TAB change one of the INFORMATION LAYOUTS to THEO PRICE. (You will now see a theoretical price listed next to each option within the chain).
  - c. Centered above the option chain change you will see SINGLE (this refers to single option quotes). Left click on the blue arrow next to SINGLE and change it to CALENDAR. You are now quoting calendar spreads in the option chain and not individual options.
  - d. Evaluate a calendar spread of interest in the option chain and look at the spreads theoretical price. Above the option chain you can now move the DATE forward to the expiration of the short month option. This will allow the trader to estimate how the spread will mature thru time. Trader's can also estimate changes in underlying price and volatility.

**Traders Notes:** the thinkorswim theoretical pricing model is a powerful financial tool in estimating option premium in the future. We suggest traders utilize this technology by first evaluating a candidate, moving the date forward, changing the underlying price, and changing volatilities of the underlying. Traders can create "what if" scenarios and have some degree of clarity in how their positions will mature as we move through time, changes in underlying price, and changes volatility.

9. To execute the time spread as a package, go to the thinkorswim "TRADE" window, right click on the option's strike price bid or ask price and select "BUY" then "Calendar."

BID X	ASK X	EXP	STRIKE	BID X	ASK X
6.00 C	6.10 P	MAR 06	75	.10 C	.15 A
1.85 C	1.95 P	MAR 06	80	.95 I	1.00 P
.20 I	.25 C	MAR 06	85	4.30 C	4.40 C
0 X	0 X				9.40 C

- BUY
  - Single
- SELL
  - Vertical
  - Back/Ratio
  - Calendar
  - Diagonal
  - Straddle
  - Strangle
  - Butterfly
  - Condor
  - Iron Condor
  - Vertical Roll
  - Covered Stock
  - Collar/Synthetic (Combo)
  - Double Diagonal
  - Unbalanced
  - Deep and Wide
- Copy
- Quick Quote
- Add Favorite
- Market Depth
- Trade Grid
- Charts

10. The trade will now be placed in the order entry screen. Notice the software has calculated adjusted mid price of the Calendar Spread in the "PRICE" column. It is highly suggested a trader route calendar spreads at the mid price. **Note:** We are be no means guaranteed a fill at the mid price but we do not ever "need" a specified trade if it is not filled at a fair price. Be aggressive in pricing spreads as this is a business about nickels and dimes.

ORDER ENTRY AND ORDER QUEUE

ORDER ENTRY ORDER QUEUE

SPREAD	SIDE	QTY	SYMBOL	SPC	EXP	STRIKE	TYPE	PRICE	ORDER	RULES	EXCHAN...
CALENDAR	BUY	+10	IBM	100	APR 06	80	CALL	1.10	LMT	LIMIT	DAY BEST
	SELL	-10	IBM	100	MAR 06	80	CALL	DEBIT			

Queue Analyze Single Order

Mid 1.10 ————— 1.25 Nat

Delete Confirm and Send

ORDER BOOK ALL

CANCEL WORKING ORDERS

## Exit Criteria for Calendar Spreads

**The following are some considerations for closing out Calendar spreads when the long option's expiration month is the very next month beyond the short option's expiration. BE CONSISTANT!!**

- A.** The ideal time to **"ROLL"** a calendar is 4 to 10 calendar days prior to expiration. The "Roll" consists of buying back the options we are short and selling the option we are long. **Example:** The trader is long a December/January 100 call calendar for a net \$2 debit; that is short the December 100 calls and long the January 100 calls. The underlying is currently trading at \$102 with 6 days to expiration of the short option. The trader should now "ROLL", buying back the short 100 calls for December and selling out the January 100 calls for a net credit of \$3. The \$3 credit is achieved as the traders short December 100 calls have decayed substantially and the long January 100 calls are near at the money with just over one month in time premium remaining.
- B.** Roll the calendar if at **ANYTIME** the TIME VALUE in the short option in our calendar spread is trading for 10% or less of the strike price increment of the product utilized in the spread. **Example:** SPY's utilize \$1 strike price increments. If at anytime the TIME VALUE of the traders short option in the calendar spread drops to 10% or less of \$1 (.10 or less) the calendar spread should be rolled immediately. Immediate action is necessary to protect the traders overall delta risk in the calendar spread and reduce the chance of early assignment of In the Money puts calendars.

**Multi- Month Calendar Spreads "Rolling" criteria: The following are considerations for closing out Calendar spreads with multiple roll opportunities.**

- A.** The key for managing Calendar spreads with multiple roll opportunities is getting as much credit as possible from the rolls. The ideal time to **"ROLL"** a calendar is 4 to 10 calendar days prior to expiration of the short option. Example: The trader has initially entered into a September/November calendar spread. 4 to 10 calendar days prior to the September expiration the trader will buy back the September options (when the premium has decayed substantially) and sell the same strike October option against the long November option "ROLL". This leaves the trader short the October options against the long November options thus rolling the calendar spread. The resulting October/November spread can then be rolled out of just prior to the October expiration.
- B.** As with all calendar spreads: Roll the calendar if at **ANYTIME** the TIME VALUE in the short option in our calendar spread is trading for 10% or less of the strike price increment utilized in the product. **Example:** SPY's utilize \$1 strike price increments. If at anytime the TIME VALUE of the traders short option in the calendar spread drops to 10% or less of \$1 (.10 or less) the calendar spread should be rolled immediately. Immediate action is necessary to protect the traders overall delta risk in the calendar spread and reduce the chance of early assignment of In the Money puts calendars. Calendars are designed to collect **THETA** decay of the short option in the spread.

## Early Exercise and Assignment:

- A. If you have a put time spread and your short put is early** exercised you will be left with long stock and long put (synthetic call). You have three choices neither one can result in more than a loss greater than the cost of the trade.
  1. Exercise the long puts. If there is not enough time value in the long puts to more than cover the commission cost for selling them then simply exercise them. Exercising your

right to sell the stock will cover close your long stock position by selling the stock at the same price you were assigned it. Your loss on the trade will be equal to what you paid for the time spread plus commissions.

2. Sell the stock and then sell the long puts. This step should be taken to take advantage of any remaining time value in the puts. Say the stock was at 27 and the 30 puts were trading at \$3.50, by selling the stock at 27 and selling the 30 puts for \$3.50 you close out the stock position and collect an extra fifty cents more per share than you would have by merely exercising the calls.
3. Deposit enough money to cover the margin requirements of the long stock position and keep the long put as a hedge. If you have enough money in your account to satisfy the margin requirements this will automatically happen. If this does happen and you do not want the long stock position, simply follow step "1" or "2" above to close out the position. The only reason to keep this position is if you believe the stock is going up as you will benefit from the long stock position. Regardless, you are never at any more risk than the original cost of the Calendar spread so long as you own the long puts which insures that you can sell the stock at same price you paid for it. The position should be closed by selling the stock and selling the put (provided it has any value) prior to the expiration of the long puts.

**B. If you have a call time spread and your short call is early exercised** you will be left with short stock and long call (synthetic put). There are three choices that can be made when in this position which are covered below. If you do not have enough money to cover the margin requirement of the short stock your broker will typically use step "a" or "b" below to close out the position

1. Exercise the long calls. If there is not enough time value in the long calls to more than cover the commission cost for selling them then simply exercise them. Exercising your right to buy the stock will cover the short stock position by buying back the stock at the same price you were assigned the short stock. Your loss on the trade will be equal to what you paid for the time spread plus commissions.
2. Buy the stock to cover the short sale and sell the long calls. This step should be taken to take advantage of any remaining time value in the calls. Say the stock was at 33 and the 30 calls were trading at \$3.50, by buying the stock at 33 and selling the 30 calls for \$3.50 you cover your short position and collect fifty cents more per share than you would have by merely exercising the calls.
3. Keep the short stock position with the long call as a hedge. Deposit money to cover the margin requirements of the short stock position and keep the long call as a hedge. If you have enough money in your account to satisfy the margin requirements this will automatically happen. If this does happen and you do not want the short stock position simply follow step "1" or "2" above to close out the position. The only reason to keep this position is if you believe the stock is going down as you will benefit from the short stock position. The trader is never at any more risk than the original cost of the Calendar spread so long as you own the long call which insures that you can buy the stock back at same price you went short. The position should be closed by buying back the stock and selling the call (provided it has any value) prior to the expiration of the long calls.