

BUTTERFLY SPREADS

→ combination of bull & bear spread

Long Call

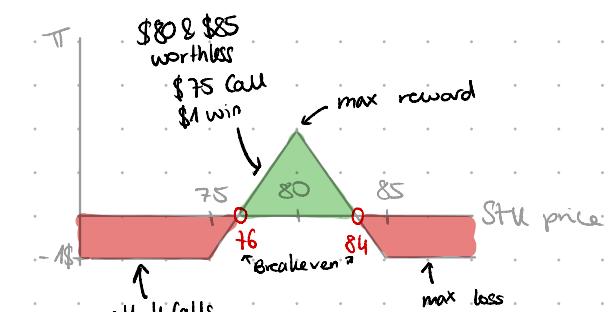
Butterfly Spread:

expect underlying to not move much at expiry

Long Call OTM
2x Short Call ATM
Long Call ITM
↳ all w. same expiry date

Example Long 85 OTM 10
2x Short 80 ATM 7
Long 75 ITM 5

Premium	Cost
10	- 10
+ 2.7	+ 2.7
- 5	- 5
	- 1 \$



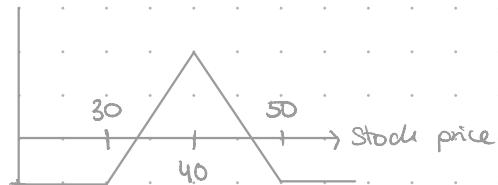
(Call = right (not obligation) to buy sth at strike price at expiry.

- expect low volatility
- max profit if stock price = ATM strike p.
- max loss: premium received - premium paid

Long Put

Butterfly Spread:

Long Put OTM \$30 Put for \$100
2x Short Put ATM \$40 Put for \$100 x 2 = \$100
Long Put ITM \$50 Put for \$100



Put = right (not obligation) to sell sth at strike price at expiry.

Value of Option:

	40	50	30	46
\$40 Put	0	0	1000	0
\$30 Put	0	0	0	0
\$50 Put	1000	0	2000	400

\$10 value x 100
= +\$600

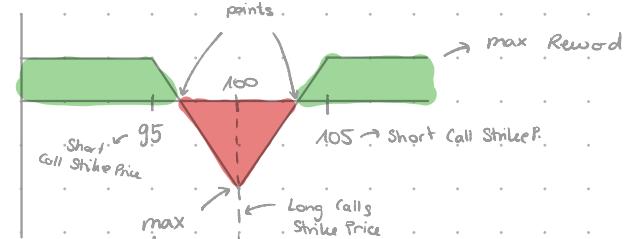
Short Butterfly Spread

Short Put / Call OTM (higher strike price)

2x Long Put / Call ATM

Short Put / Call ITM (lower strike price)

{ allows trader to keep initial premium received



FEATURES:

- delta neutral
- + theta positive
- vega negative (ideally drop in IV)

→ Find Stock that is neutral (low VIX)

adjust trade as we try

MATURITY: 1 month, reasons: - positive theta (rather 28 days than 58 days), shorter duration: probs of stock price going out of area compress \oplus

↳ Do NOT exercise option early!

→ butterfly spreads are defined by their combined payoff (not individual legs)

→ early exercise breaks the structure & introduces risk

→ Instead: close position or let expire

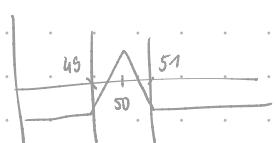
Term	What It Means	Should You Do It in a Butterfly?
Exercise early	Manually convert option to stock/cash	<input checked="" type="checkbox"/> Almost never
Exit early	Close the whole spread early	<input checked="" type="checkbox"/> Often smart

↳ less time to go wrong

EXIT EARLY *

STRIKE PRICE: the higher the difference between ATM and OTM/ITM probability of reward increases

↳ narrowing strike prices will positively affect reward to risk ratio (decreases probability)



How to Define "Low" and "High" Volatility Using VIX

These thresholds aren't fixed but here are general guidelines:

VIX Level	Volatility Interpretation	Suggested Strategy
Below 13	Very Low Volatility	Long Call Butterfly (expect sideways move)
13-17	Low to Moderate Volatility	Still acceptable for Long Butterfly
18-22	Neutral / Moderate Volatility	Avoid butterflies unless strong directional bias
Above 22	High Volatility	Short Call Butterfly (expect big move)
Above 30	Very High Volatility / Panic	Ideal for Short Butterfly (large move expected)

use long term average to decide if low/high volatility

→ VIX longterm average = 19.5

MULTIPLE TRADES? → across assets to diversify

→ across strike prices / maturities to diversify
↳ if multiple price targets

MULTIPLE TRADES

PROS	CONS
→ diversify risk → broader view → not all-in on one outcome	→ higher commissions → more complexity & monitoring several trades

Your Goal

Targeting a specific price

Not sure where price lands

Trading across different stocks

Want simpler management

Avoiding correlation risk

INCREASE CONTRACT SIZE

PROS	CONS
→ simple execution → easier to manage & analyze → lower total fees	→ concentrated risk

Best Approach

Increase contracts on one spread

Use multiple butterflies at different strikes

Multiple butterflies

Single butterfly, scaled contracts

Use different tickers/strikes

Type	When to use
Long Butterfly	expect low volatility, stock prices stay in narrow range
Short Butterfly	expect high volatility, stock prices move far from strike price

Step 2: Define Strike Prices

- ATM strike sets stock price target at expiry
- OTM and ITM strike: equal distance from ATM (2-10% from ATM depending on volatility)
 - tight if low volatility (cheaper, lower reward, lower prob)
 - wide if more movement (more expensive, higher reward, higher prob)

Step 3: Select Expiration (Maturity)

Time to Expiry	When to Use	Pros & Cons
Short-term (1-2 weeks)	Quick, confident trades	Fast time decay, higher theta risk
Medium-term (3-6 weeks)	Balanced risk/reward	More forgiving on timing
Long-term (2-3 months)	Low decay, more time for setup	Costlier, slower payoff

* EXIT EARLY based on greeks:

Long Butterfly

Condition	Greek Cue	Why	□
Price is near K2, and Theta is high	▲ Theta spikes	Max profit is approaching; decay starts to flatten P&L, so close to lock in gains	
Price moves away from K2, and Delta moves away from 0	▲ Delta ≠ 0	Shows directional bias creeping in; odds of profit are dropping	
Gamma increases sharply, and you're close to expiration	▲ Gamma high near expiry	Price movement becomes dangerous — profit can vanish fast	
Profit is >80% of max	-	Time to lock in gains and reduce risk	



Factor	Long Butterfly	Short Butterfly
Early exercise?	✗ Never (avoid breaking structure)	✗ Same
When to close	Near K2 = hold; Far from K2 = close early	Far from K2 = hold; Near K2 = close early
Best window to exit	5–10 days before expiry	5–15 days before expiry
Let expire?	If price is close to K2	If price is far from K2

Short Butterfly

Condition	Greek Cue	Why	□
Price is drifting toward K2	▲ Gamma and Delta rise	Risk of max loss is growing fast as expiration nears	
You've captured 70–90% of your credit	-	Diminishing returns left; better to close and redeploy capital	
IV drops, and Theta slows	▼ Implied Vol & Theta drop	Trade is stagnating, better risk/reward elsewhere	
Less than 7 days to expiry, and price is close to K2	▲ Gamma explodes	Danger zone: small moves can cause large losses fast	