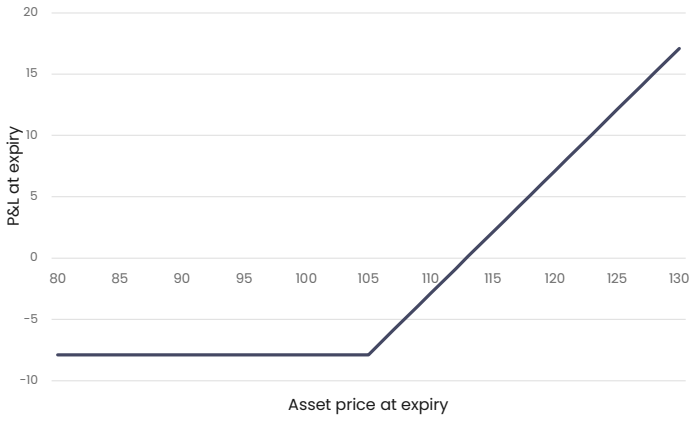
Option Mechanics

FINANCIALEDGE

Financial Options



Gives the option **buyer** the **right to buy** (call) or **sell** (put) the underlying:

At a predetermined level (strike price)

At or before a specified date (expiry date) in the future

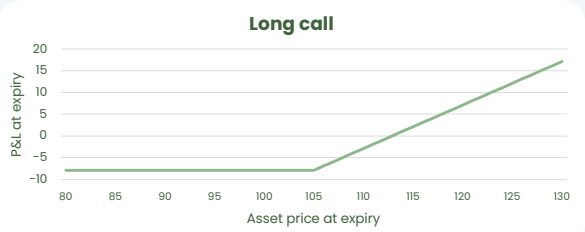
Risks and opportunities **differ significantly between buyer and seller -** to compensate for this asymmetry the **option buyer must pay** a **premium**

Example:

12-month call option	$105 strike price	Premium of $7.90

FINANCIALEDGE

The 4 General Option Positions



FINANCIALEDGE

Option Moneyness

In the money (ITM)

Strike is favorable in comparison to the **current market price**

105 strike put when underlying trades at 90

At the money (ATM)

Strike equals current market price

105 strike call when underlying trades at 105

Out of the money (OTM)

Current market price is **favorable** in comparison to the **strike**

105 strike call when underlying trades at 90

Moneyness can be determined in **reference to spot** or **forward price** of **the asset.**
As **spot** and **forward prices** often **differ,** care must be taken:

Example:

12-month call option

Strike price	Spot price	Forward price
105	100	105
	↓	↓
	Out of the money spot	At the money forward

FINANCIALEDGE

Option Exercise Styles

American option

Buyer can **exercise** at any **time** up to and **including the expiry date**

Can only be **exercised once**

If exercised **before expiry,** buyer can **no longer benefit** from **future price changes** of the **underlying asset**

Buyer can **sell** at **any time** before **expiry**

European option

Buyer can **exercise** on the **expiry date**

Buyer can **sell** at any time **before expiry**

Bermudan option

Can be **exercised on a range** of **specific dates** before **expiry** and on **the expiry date**

Can only be **exercised once**

If **exercised before expiry,** buyer can **no longer benefit** from **future price** changes of the **underlying asset**

Option Premium – The Fundamentals

Option payoff profiles are **asymmetrical**

Risks and **opportunities differ significantly** for option **buyers** and **sellers**

Option **long positions** are therefore **preferable** to **short positions,** the **premium paid from option buyer** to **option seller compensates** for this

Conceptually, the **option premium** is linked to the **expected loss of the option seller**

Option premium should be **equal** to the **present value** of the **expected loss**

Option pricing means **answering two questions:**

1

What is the **probability** that the **option** will be **exercised?**

2

If the **option is exercised,** how much will **the seller have to pay out?**

However, finding the **answers** is **not trivial**

Option pricing models answer these questions based on **distribution assumptions** or **modeling techniques**

Option Premium – The Components

For the **intuitive understanding** of option **premium behavior,** it is helpful to interpret the **premium as the sum of:**

Intrinsic value

The present value of the **difference** between **option strike** and **price** of the **underlying** when **option is ITM**

ATM and **OTM options** have an **intrinsic value of zero**

Time value

Quantifies risk to **seller due** to **exercise uncertainty**

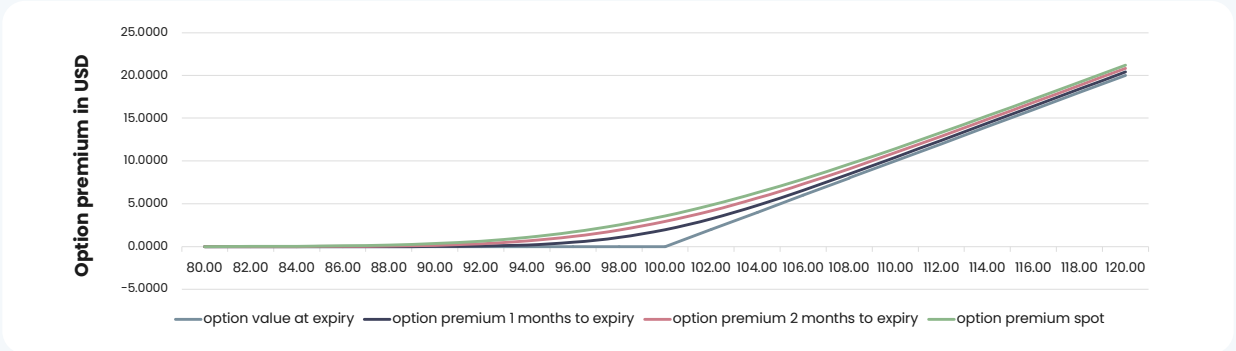
Intuitively increases with **option tenor** and **volatility**

Moves to **zero** as **option approaches expiry**

The option premium cannot be negative

The option premium must be equal to or higher than the intrinsic value (time value cannot be negative)

Option Premium Dynamics



At option expiry, **the option value** is given by the **intrinsic value** as **time value is zero**

Prior to expiry, the option premium should **exceed its intrinsic value**

Time value is **highest** for **ATM strikes**

Time value **decreases** when **options move OTM** or **ITM**

Option Premium Drivers – An Overview

Increased variable	Effect on call price	Effect on put price
Spot price	↑	↓
Time to expiry	↑	↑
Volatility	↑	↑
Interest rates	↑	↓
Underlying asset yield	↓	↑

Why Use Options?

Through combinations of **long/short positions** in **options** and/or **underlying investors** can **generate payoff profiles** and **exposures** that are unique to **option-based strategies. For example:**

Long positions in the **underlying** with **predefined maximum loss** and **no execution risks** or the **risk of getting stopped** out at the **bottom**

Monetization of price targets

Positions with **P&L solely driven** by the magnitude of the **underlying price change** but **independent** from whether the **underlying price rises** or **falls**

Direction

Volatility

Covered Call

Scenario:

Investor is **long stock at $50**

Expects **price to increase** but to **remain below $54** for the **next three months**

Option Trade:

Sell 3 months $54 call (premium: $1.30)

Advantages:

- Income generation through premium
- OTM strike allows (limited) upside participation

Considerations:

- Only limited downside protection
- Opportunity costs in case of significant rally

FINANCIALEDGE

Protective Put

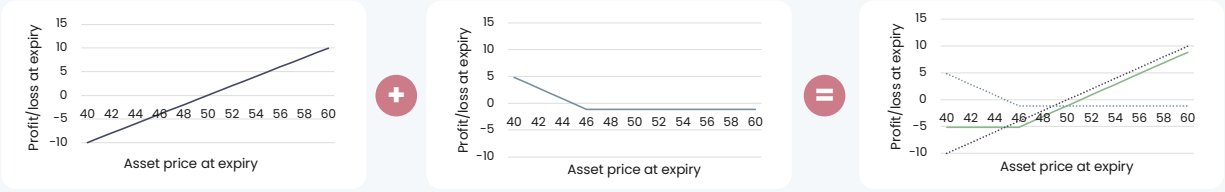
Scenario:

Investor is **long stock at $50**

Is looking for **3 months downside protection at $46**

Option Trade:

Buy 3 months $46 put (premium: $1.15)



Advantages:

- Limited loss potential, upside exposure remains
- No risk of getting stopped out at the bottom

Considerations:

- No immediate downside protection (strike at $46 vs. $50 spot)
- Underperformance when market moves up because of premium outlay

FINANCIALEDGE

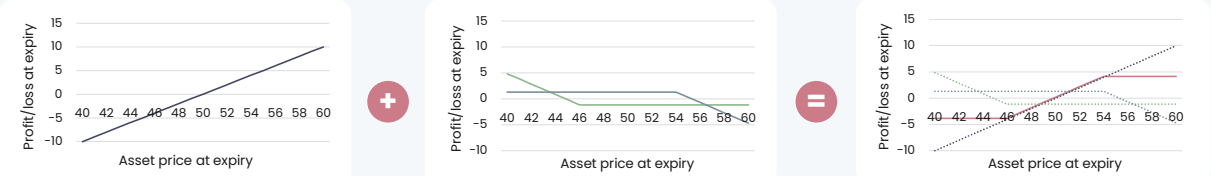
Collar

Long investors often combine **protective puts** with **covered calls** – this is referred to as a **collar**

The trigger is the **need for downside protection,** the call is **sold** to (partially) **fund the premium outlay** for the **put**

In practice, **collars** are often **designed** so that there is a **net premium payment of 0** (zero cost collars)

Practically a **hedge** that only becomes **active outside** the **price** range set by **the option strikes**



Advantages:

Limited loss potential, without risk of getting stopped out at the bottom

Reduced premium outlay in comparison to protective put

Considerations:

Opportunity costs in case of significant rally

No immediate downside protection (put strike at $46 vs. $50 spot)

FINANCIALEDGE

Bull Call Spread

Scenario:

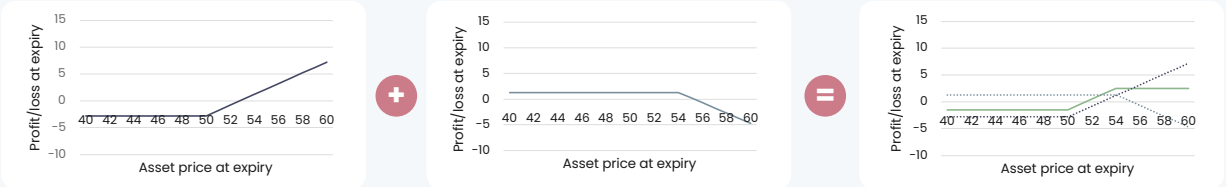
Trader expects stock to rise over the **next three months** (spot: $50) but to **remain below $54**

Option Trade:

Buy 3 months $50 call (premium: $2.80)

Sell 3 months $54 call (premium: $1.30)

Net premium outlay: $1.50



Advantages:

Limited loss potential, without risk of getting stopped out at the bottom

Reduced premium outlay in comparison to outright call

Considerations:

Opportunity costs in case of significant rally

Not a zero-cost solution

FINANCIALEDGE

Straddles and Strangles

Straddles and **strangles** are **volatility strategies.** Their **P&L** is defined by the **magnitude** of the **underlying's price change** and does not **depend** on the **direction**

Straddle

Simultaneous long position in a call and a **put** on the **same underlying,** with **identical strike** and **expiry** (long straddle, long volatility)

Or **short position in both** (short straddle, short volatility)

Strangle

Simultaneous **long position** in a call and a **put position** on the **same underlying** with **identical expiry** but **lower put strike** and **higher call strike** (long strangle, long volatility)

Or **short position** in **lower strike put** and **higher strike call** (short strangle, short volatility)

Long Straddle

Scenario:

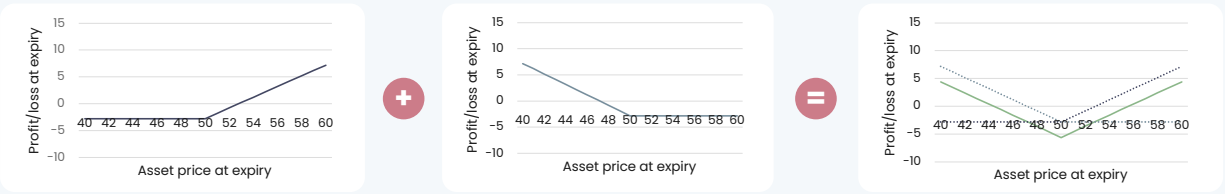
Trader expects a **significant move** in a **stock** over the next **3 months** but is **unsure about the direction** (spot: $50)

Option Trade:

Buy 3 months $50 call (premium: $2.80)

Buy 3 months $50 put (premium: $2.80)

Net premium outlay: $5.60



Advantages:

Positive payout as long as stock moves out of a **certain range**

Considerations:

Significant **initial premium outlay** (long two options)


FINANCIALEDGE
www.FE.training
Please do not redistribute these materials without the express permission of Financial Edge Training.
© 2024 Financial Edge Training
FINANCIALEDGE