

BASICS OF DERIVATIVES



Indian Equity Derivatives Market: A Brief History

May 2000

SEBI granted approval to commence Derivatives Trading in India

2000 - 2001

Product

Launched in

Index Futures (S&P CNX Nifty)

June 2000

2001 – 2002

Index Options (Nifty)

June 2001

Stock Options

July 2001

Stock Futures

Nov 2001

2003 – 2004

CNX IT

Interest Rate Futures

2004 – 2005

- NSE became no. 1 stock exchange in the world in Stock Futures

2005 - 2007

- Bank Nifty, Nifty Junior, CNX100
- 188 securities in derivatives segment
- Enhancement of number of strikes for Nifty options based on index levels

Main Features

Premier exchanges: The National Stock Exchange of India Limited (NSE)
The Stock Exchange, Mumbai (BSE)

... Almost all transactions in Derivatives Segment are executed on NSE

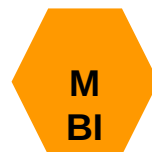
Trading system: Fully automated, screen based and order driven system
Orders are matched on Price Time priority

Contracts are cash settled

Trades are marginable (unlike in equity segment where institutional trades are margin exempt)

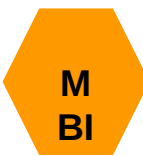
Derivatives volume is more than double the Equity segment volume primarily due to lack of alternative viable products for short selling and carry forward of trades in Equity segment and, also pricing inaccuracies providing arbitrage opportunities

Records achieved in the F&O segment



Product	Highest Traded Value (Rs. in crores)	Highest Traded Value (USD in billion)	Date
Index Futures	20776	4.68	20/12/2006
Stock Futures	38839	8.35	27/04/2006
Index Options	6606	1.48	12/12/2006
Stock Options	2306	0.50	17/01/2006
Total F&O	60434	12.99	27/04/2006

Comparative Analysis – World Exchanges (Dec 2006)



PRODUCT	<u>STOCK FUTURES</u>		<u>INDEX FUTURES</u>		<u>STOCK OPTIONS</u>		<u>INDEX OPTIONS</u>	
NSE's Position	2 nd with 92,61,984		4 th with 57,98,118 contracts		15 th with 4,34,629 contracts		8 th with 20,21,995 contracts	
Rank	Name of the Exchange	Number of Contracts	Name of the Exchange	Number of Contracts	Name of the Exchange	Number of Contracts	Name of the Exchange	Number of Contracts
1	JSE	1,31,18,131	Chicago Mercantile Exchange	3,71,45,122	CBOE	3,13,83,194	Korea Exchange	17,54,65,423
2	NSE	92,61,984	Eurex	2,40,22,746	Philadelphia SE	2,86,44,125	CBOE	2,15,85,986
3	BME Spanish Exchange	31,12,178	Euronext.liffe	6,342,391	Sao Paulo SE	2,21,52,402	Eurex	1,64,31,920

Meaning of Derivatives

- Derivatives is a product whose value is derived from the value of the underlying asset
- Underlying asset can be equity, forex, commodity or any other asset
- Eg. Sensex, Nifty

Functions of Derivatives

- Price discovery
- Risk transfer
- Higher volumes
- Controlled speculation
- Enhances entrepreneurship

Types of Derivatives

- Forwards

A forward contract is a customized agreement between two parties to exchange an asset at certain period in future at today's pre agreed price

- Futures

A futures contract is an agreement between two parties to exchange an asset at a certain date at a certain price

Futures contracts are standardized forward contracts that are traded on an exchange

- Options

An options contract gives buyer the right, but not the obligation to buy or sell a specified underlying at a set price on or before a specified date

Participants in Derivatives

- Hedgers

Hedgers face risk associated with the price of an asset they own

They use derivatives to reduce or eliminate risk

- Speculators

Speculators bet on future movements in the prices of an asset

Derivatives give them an extra leverage, by which they can increase both the potential gains and losses

- Arbitrageurs

Arbitrageurs take advantage of discrepancy between prices in two different markets

Development of Exchange Traded Financial Derivatives



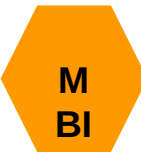
- Increased volatility
- Integration of markets
- Better communication facilities
- Sophistication of risk management
- Innovations in derivatives

Introduction to Forwards

- Forwards

- ☞ A forward contract is a customized agreement between two parties to exchange an asset at certain period in future at today's pre agreed price
- ☞ eg. On May 1, 2004, Mr. X agrees to buy ten tola of Gold from Mr. Y on Dec 31, 2004 at Rs 6500/tola
- ☞ Mr. X has taken a long position and Mr. Y short
- ☞ Other details are negotiated bilaterally

Forwards – Salient features



- Bilateral contracts
- Customized agreement
- Price known only to the parties
- Delivery settled
- Reversal compulsory with the same counter party

Forward- Users

- Hedgers
eg. Forex
- Speculators

Forward - Limitations

- Lack of centralization of trading
- Illiquidity
- Counter party risk

Introduction to Futures

- Futures were designed to solve the problems that existed in the forward markets
- A futures contract is an agreement between two parties to exchange an asset at a certain date at a certain price
- Futures contracts are standardized forward contracts that are traded on an exchange

- To facilitate liquidity, exchange specified standard features for the contract
 - ▮ Quantity and quality of the underlying
 - ▮ Date and month of delivery
 - ▮ Units of price quotation and min. price change
 - ▮ Location and mode of settlement
- Futures can be offset prior to maturity, 99% offset prior to maturity

Distinction between Futures and Forwards



- **Futures**

Traded on exchange

Standardized

Liquid

Margins required

Daily settled

Forwards

OTC in nature

Customized

Illiquid

No margins

Expiry settled

Futures Terminology

- **Spot Price:**

Price at which an asset trades in the spot market

- **Futures price:**

Price at which futures contract trades in the futures market

- **Contract cycle:**

Period over which a contract trades

Derivatives contracts have one, two and three months expiry cycles

Contracts expire on last Thursday

New contracts are fired on Friday

- **Expiry date:**

Date specified on the derivatives contract

It's the last Thursday and the last day for the contract to be traded

Contract will cease to exist from this day

- **Contract size:**

Quantity of asset that has to be delivered under one contract

- **Basis:**

It is the difference between futures and spot. Theoretically basis is always positive

- **Cost of carry:**

It measures the interest cost that is paid to finance the asset less the income earned on that asset

- **Initial margin:**

Amount that must be deposited in the margin account in order to initiate a futures position

- **Mark to Market (MTM) margin:**

In futures, at the end of each trading day, the margin account is adjusted to reflect the investors' gain or loss depending upon the futures closing prices. This adjustment is called MTM

Mr. X buys Nifty futures at 1300

Day	Closing	MTM a/c
One	1310	+10
Two	1305	- 05
Three	1315	+10
Total		+15

- **Maintenance Margin:**

This is lower than the initial margin. This margin is set to ensure that the balance in the margin account never becomes negative.

If the balance falls below maintenance margin, margin call is made.

Trader is expected to top up the margin account to the initial margin level

Futures Payoff

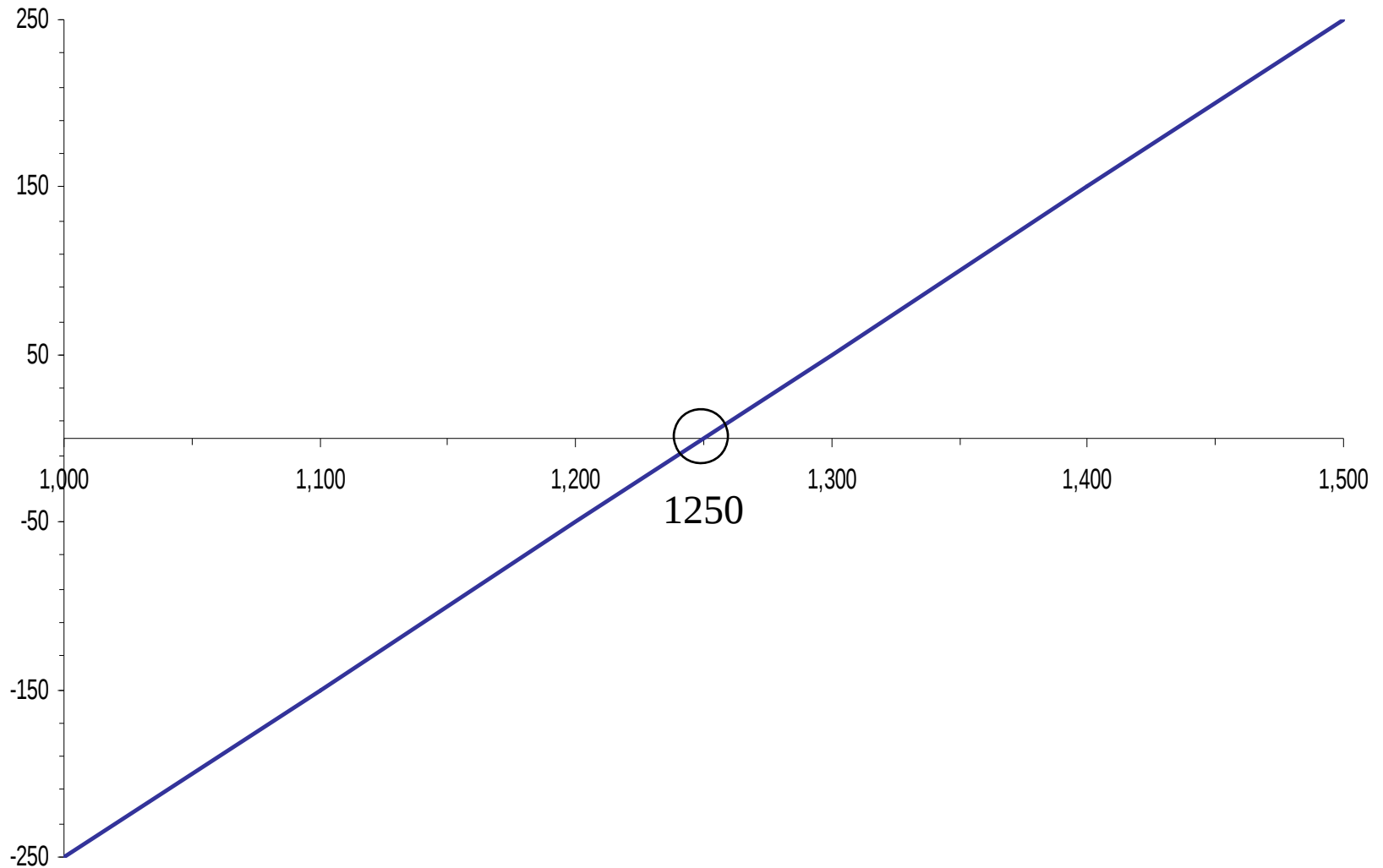
- A payoff is the likely profit or loss that would accrue to a market participant with change in the price of the underlying asset
- Futures have a linear payoff, i.e. the losses as well as profits for the trader of futures contract are unlimited

Futures – Buyer Payoff

- Mr. X buys a Nifty futures at 1250

Nifty	Payoff
1,000	-250
1,100	-150
1,200	-50
1,300	50
1,400	150

Payoff for Futures Buyer

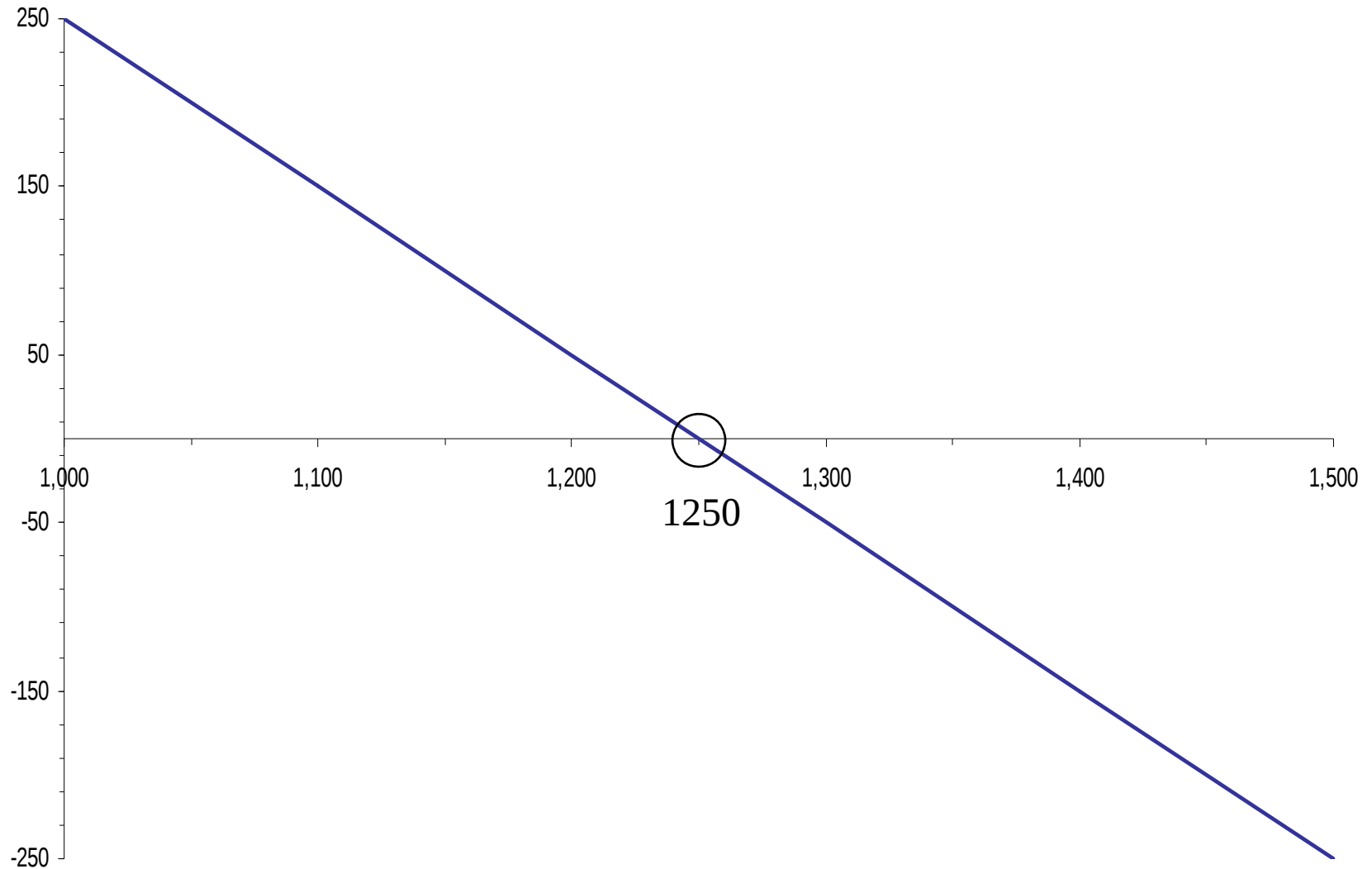


Futures – Seller Payoff

- Mr. X sells Nifty futures at 1250

Nifty	Payoff
1,000	250
1,100	150
1,200	50
1,300	-50
1,400	-150

Payoff for Futures Seller



Futures Pricing

- In equation terminology-

$$\mathbf{F = S + C = S(1 + r)^T}$$

Where,

F = Future Price

S = Spot Price

C = Cost of Carry

r = Rate of Interest

T = Time to expiry

Example

- Spot Nifty (S) = 1250
- Interest rate cost (r) = 10%
- Time to expiration (t) = 1 month

...contd

$$\begin{aligned} F &= S(1+r)^t \\ &= 1250 (1+0.10)^{1/12} \\ &= 1260 \end{aligned}$$

Uses of Futures

- Hedging
- Exposure to FII restricted stocks
- Arbitrage and Reverse arbitrage
- Cash Management
- Leveraged Directional Trading

Hedging

- Is a mechanism to reduce price risk, by taking an opposite position in futures market.
- Equity Investments of USD 1bn
- Hedging can be initiated by Selling Nifty Futures....hedge can be for 20%, 50% or 100% based on view
- Ideally 25 – 35% hedge is kept at all times, then based on view, its increased or decreased
- Similarly hedge can be initiated also for a single stock

Hedging

- Is a mechanism to reduce price risk.
- By taking an opposite position in futures market.

Hedging on a scrip

(F&O Segment)

- Mr X takes a Rs 10 mn long position in IPCL on May 1, 2004 @ Rs 100 / share
- Take a short position on IPCL futures of Rs 10 mn

Hedging on a scrip

(Non F&O Segment)

- Mr X takes a Rs 10 mn long position in Zee Tele on May 1, 2004 @ Rs 100 / share
- Suppose the beta is 1.2
- Take a short position on Index futures of:
 $\text{Rs } 10 \text{ mn} \times 1.2 = \text{Rs } 12 \text{ mn}$

Portfolio Hedging

Scrip	Price	Shares	Value	Weightage	Beta	Portfolio Beta
ITC	112	100	11200	6.0%	0.59	0.04
OBC	68.25	200	13650	7.3%	0.90	0.07
Cipla	847.65	100	84765	45.3%	0.75	0.34
Lupin	149.85	200	29970	16.0%	1.13	0.18
Siemens	237.5	200	47500	25.4%	1.10	0.28
TOTAL			187085			0.90

Take a short position on Index Futures for Rs 168377 (0.90 x 187085)

Exposure to FII restricted stocks

M
BI

- Exposure to stocks where the FII limit has reached can be taken via futures
- E.g. SBI, BOB

Better execution



- Since derivatives market is more liquid than equity markets, the impact cost for execution is relatively lower
- Simultaneous execution can happen in both segments, thus enabling better rates

Arbitrage and Reverse Arbitrage

- Futures price is always at POD to spot
- Widening of this spread throws arbitrage or rev arbitrage opportunity providing for a risk free return

Modes of Arbitrage

- Lending funds to the market
- Lending securities to the market

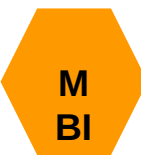
Lending funds to the market

- Scenario: Stock ABC trading at 100, and its one month futures is trading at 101
- Action: Buy stock ABC in cash segment and simultaneously Sell its one month futures
- Follow up – Plan A: On or before the expiry of one month futures contract, the difference between spot price and futures price narrow down to trade at parity, unwind the position
e.g. ABC spot price on the expiry day is 110 – SELL the stock and, ABC one month futures will also be at 110 – Buy the futures
- Result: Arbitrage position is unwound at a risk less profit of 12% p.a.
- ...contd

- Follow up – Plan B: Second month futures trading at 100 bps premium to the first month, then rollover the position from the first month to the second month
e.g. ABC one month futures is at 110 – Buyback the futures and, ABC second month futures is at 111.10 – Sell the futures
- Result: The funds continue to remain deployed at 12% p.a.

Lending securities to the market

(assuming we hold the delivery of the stock)



- Scenario: Stock ABC trading at 101, and its one month futures is trading at 100
- Action: Sell stock ABC in cash segment and simultaneously Buy its one month futures
- Follow up: On or before the expiry of one month futures contract, the difference between spot price and futures price narrow down to trade at parity, unwind the position
e.g. ABC spot price on the expiry day is 110 – Buy the stock and, ABC one month futures will also be at 110 – Sell the futures
- Result: Arbitrage position is unwound at a risk less profit of 12% p.a. and continue to hold the delivery of the stock

Costs involved

- Brokerage (inclusive of service tax of 10.20%)
 - Equity: 0.05%
 - Futures: 0.05%

- Securities Transaction Tax
 - Equity: 0.125%
 - Futures: 0.0166%

- Margin costs
 - Initial margin between 15 – 20%
 - Exposure margin between 5 – 10%
 - Mark to market margin – depending on the futures movement

- Custody and clearing charges

Cash Management

- During redemption pressures or during times of tight cash position, equity positions can be shifted to futures
- By doing this, same exposure is maintained at a small margin, thus releasing much needed cash

Exposure

- Exposure can be initiated in futures before the actual fresh fund inflows
- Opportunity not missed if markets move up

Leveraged directional trading

- Trade your short term view on the market or single stock based on budget, corporate numbers, economic reforms, political scenario, unforeseen events etc via futures
- If you believe that your activity in equity is going to impact the price, then its worth taking an upfront exposure in futures first
- This can lead to generation of incremental returns

Speculation

- Speculation using Index Futures

View on the market based on budget, overall corporate numbers, economic reforms, political stability, unforeseen events etc

Three possibilities for Index trading:

- Trade on the stocks which are most likely to be impacted
- Trade on Index (basket) portfolio
- Trade on Index Futures

- **Speculation using Stock Futures**

Advantages

Leverage

Low transaction

Disadvantages

MTM debit

No Ownership

On expiry of series

- Rollover to the next month
- Shift futures position to equity
- Let the futures position expire

Options

- Hyundai is launching SONATA
- Price is Rs 15 Lakh
- You can book the car by paying Rs 50,000

- By booking the car, what have you bought?
- When booking matures, can Hyundai force you to buy SONATA?
- Can you force Hyundai to sell SONATA?

Introduction to Options

- An options contract gives buyer the right, but not the obligation to buy or sell a specified underlying at a set price on or before a specified date
e.g. Car Purchase, Insurance

Options Terminology

- **Index options:** Have index as the underlying
- **Stock Options:** Have stock as the underlying
- **Option buyer:** Buys the option by paying premium and gets the right to exercise options on writer/seller
- **Option seller:** Sells/writes the option and receives the premium and is hence under obligation to buy/sell asset if the buyer exercises option

- **Option premium:** Price paid by the buyer to seller to acquire the right. Comprises of Intrinsic Value and Time Value
- **Strike / Exercise price:** Price at which the underlying may be purchased or sold
- **Expiry date:** It's last Thursday of the month for options to be exercised/ traded. Options cease to exist after expiry

Options Payoff

- Optional characteristics of options results in a non linear payoff for options. Non linear payoffs provide flexibility to create combinations
- Losses of the buyer is limited to the premium paid and profits are unlimited
- For writers/sellers losses are unlimited and profits limited to the premium received

Call options

- A call option gives the buyer, the right to buy specified quantity of the underlying asset at a set strike price on or before expiration date
- The seller(writer) however, has the obligation to sell the underlying asset if the buyer of the call option decides to exercise the option to buy

Buying of a Call Option

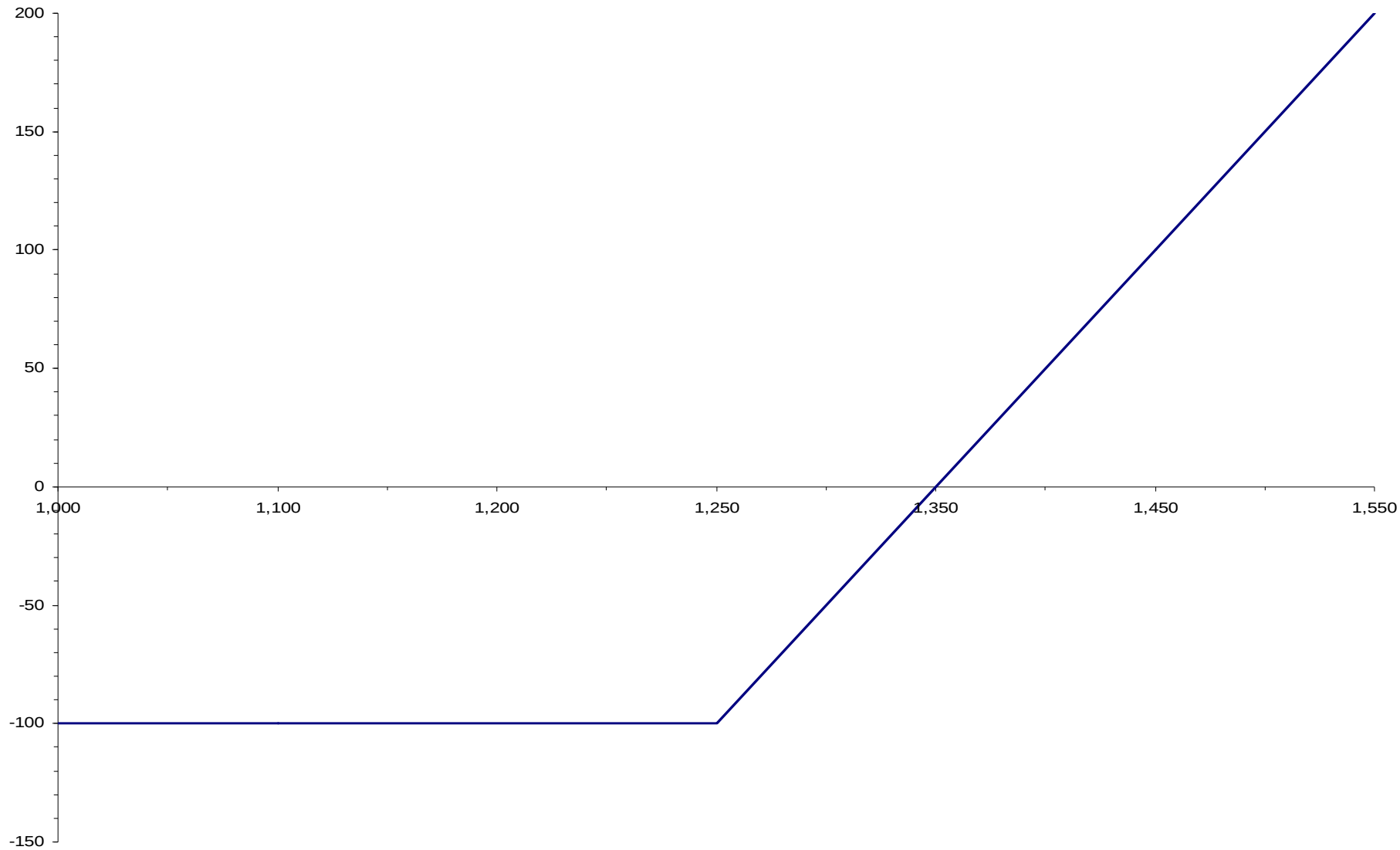
View: Bullish

- Buy a one month Nifty Call
- With the Strike of 1250
- Premium of Rs 100

Payoffs

Nifty Spot	1000	1100	1200	1250	1350	1400	1500
	Below strike	Below strike	Below strike	At strike	Break even	Above strike	Above strike
Value of 1250 call	0	0	0	0	100	150	250
Premium paid	-100	-100	-100	-100	-100	-100	-100
Net Profit / (Loss)	-100	-100	-100	-100	0	50	150

Payoff chart



Selling of a Call Option

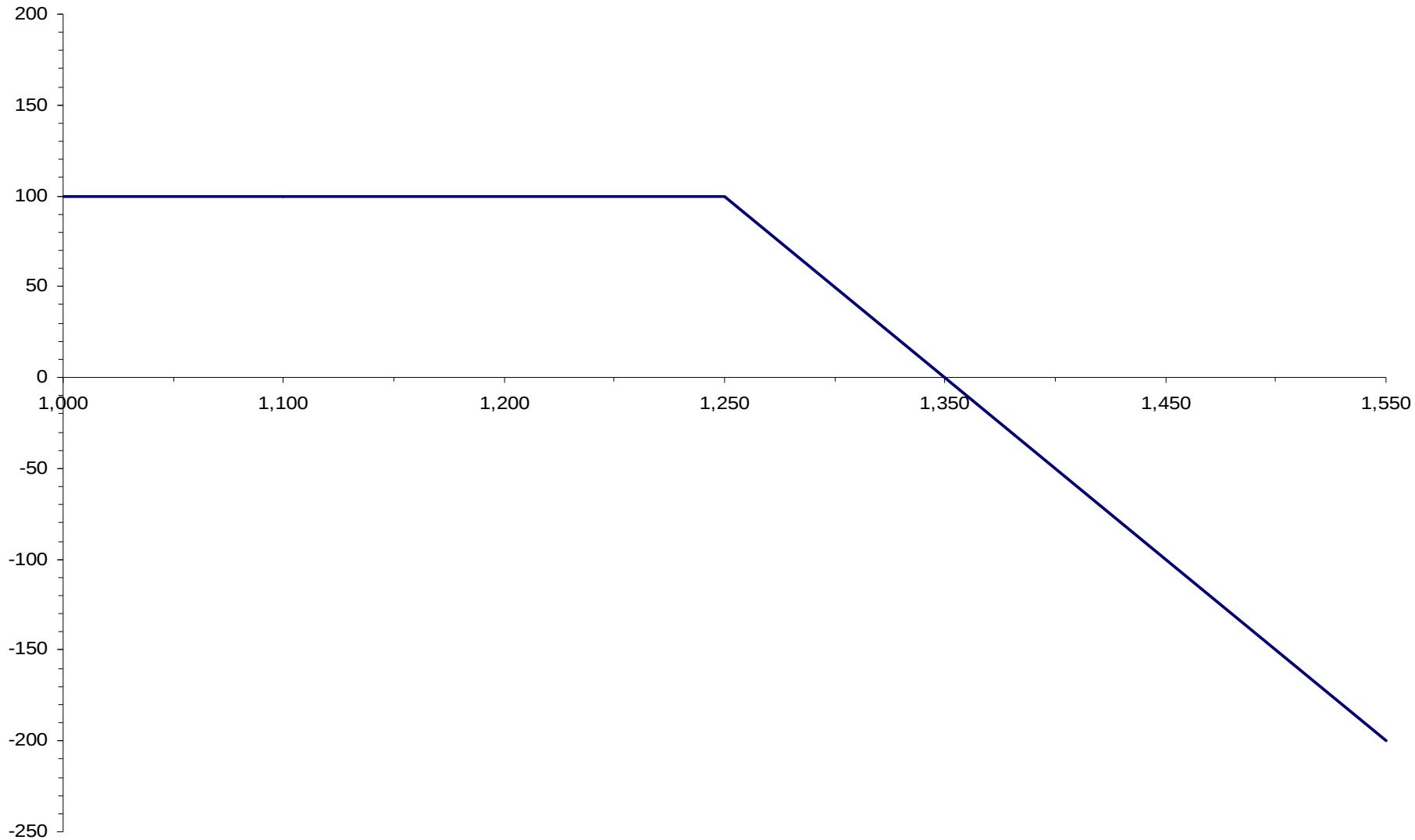
View: Bearish

- Sell / Write a one month Nifty Call
- With the Strike of 1250
- Premium of Rs 100

Payoffs

Nifty Spot	1000	1100	1200	1250	1350	1450	1550
	Below strike	Below strike	Below strike	At strike	Break even	Above strike	Above strike
Value of 1250 call	0	0	0	0	-100	-200	-300
Premium recd	100	100	100	100	100	100	100
Net Profit / (Loss)	100	100	100	100	0	-100	-200

Payoff Chart



Put Options – Buyer

- A put option gives the buyer the right to sell specified quantity of the underlying asset at a set strike price on or before expiration date.
- The seller (writer) however, has the obligation to buy the underlying asset if the buyer of the put option decides to exercise his option to sell.

Buying of a Put Option

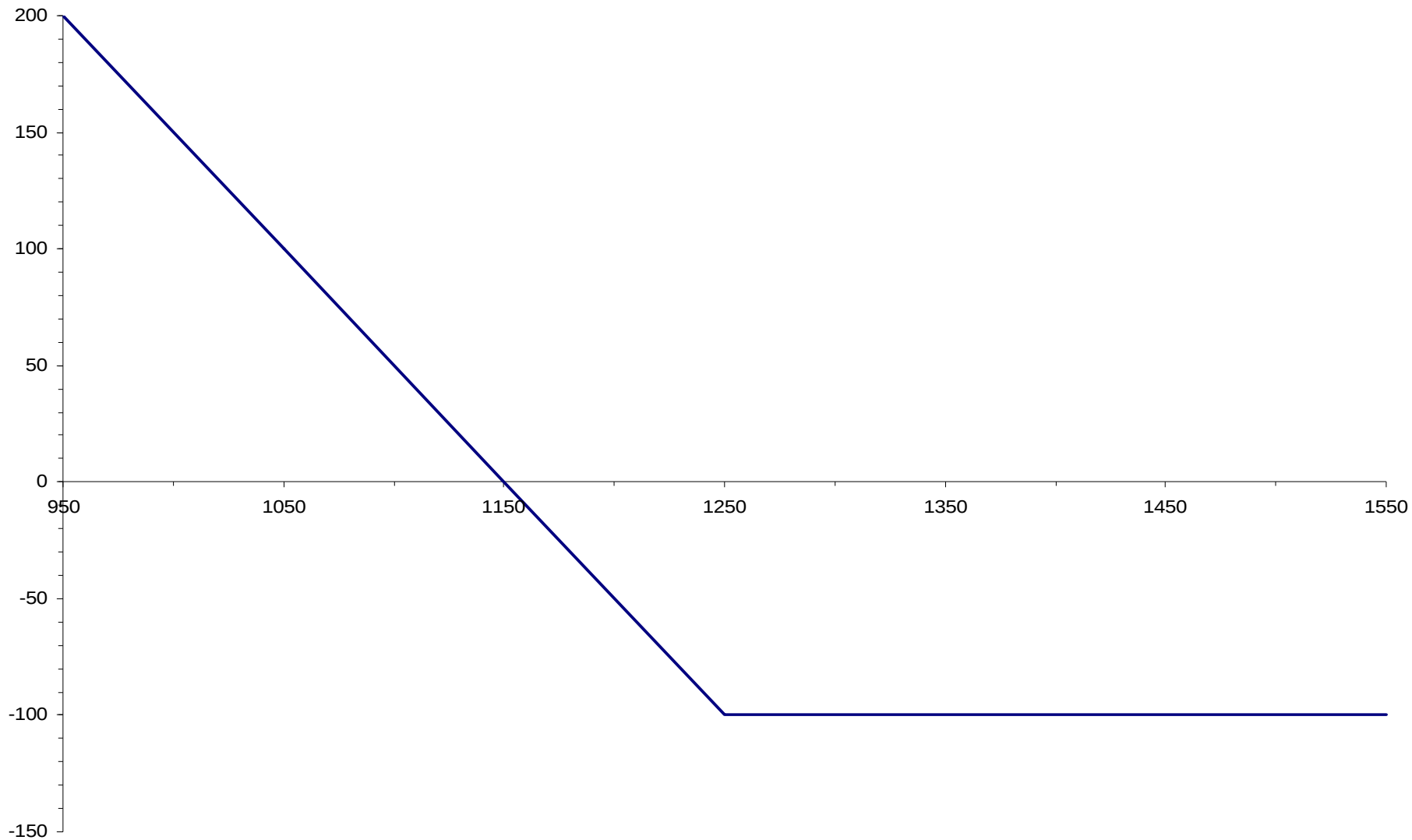
View: Bearish

- Buy a one month Nifty Put
- With the Strike of 1250
- Premium of Rs 100

Payoffs

Nifty Spot	1000	1100	1150	1250	1350	1450	1550
	Below strike	Below strike	Break even	At strike	Above strike	Above strike	Above strike
Value of 1250 put	250	150	100	0	0	0	0
Premium paid	-100	-100	-100	-100	-100	-100	-100
Net Profit / (Loss)	150	50	0	-100	-100	-100	-100

Payoff Chart



Selling of a Put Option

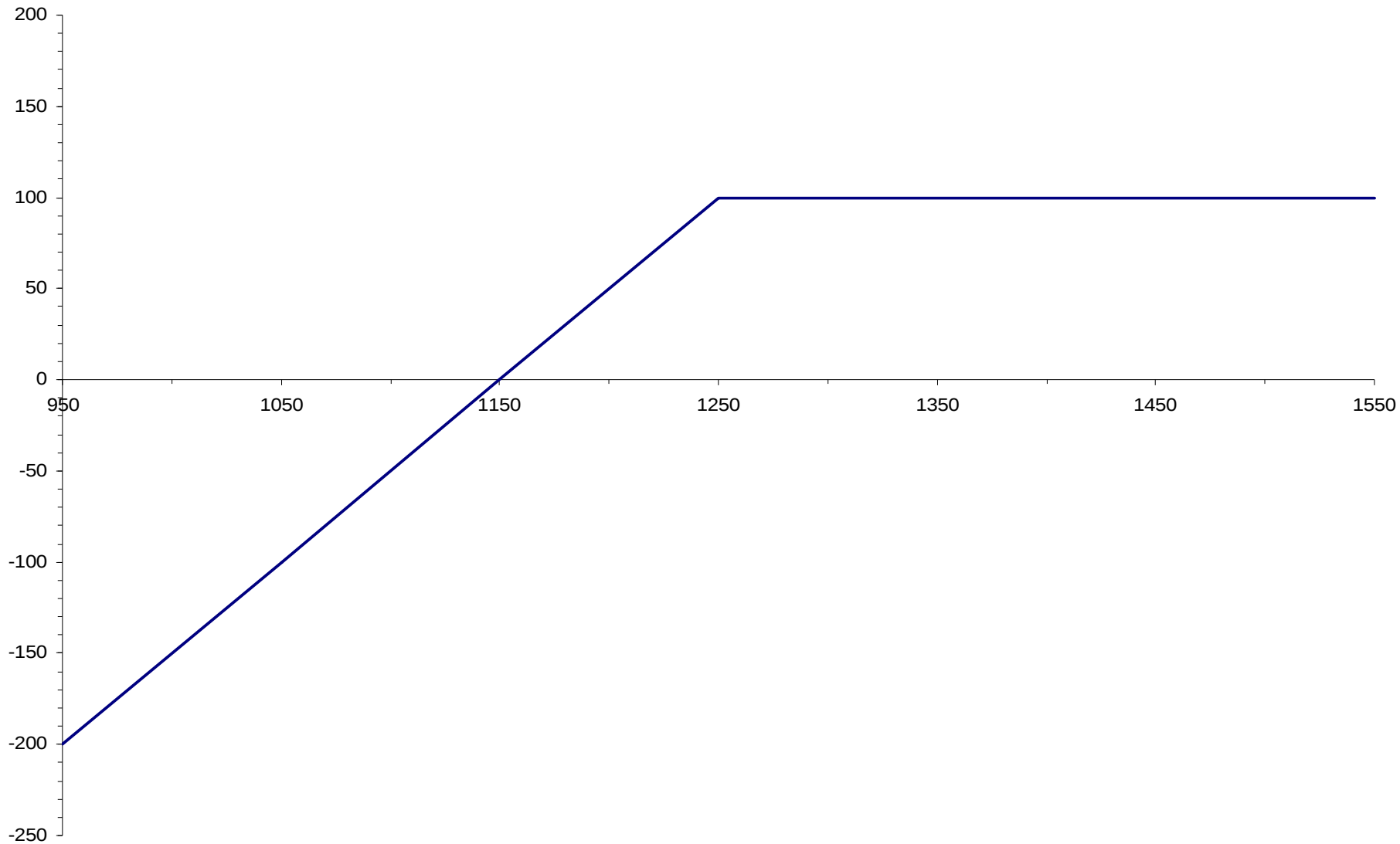
View: Bullish

- Sell / write a one month Nifty Put
- With the Strike of 1250
- Premium of Rs 100

Payoff

Nifty Spot	1000	1100	1150	1250	1350	1450	1550
	Below strike	Below strike	Break even	At strike	Above strike	Above strike	Above strike
Value of 1250 put	-250	-150	-100	0	0	0	0
Premium recd	100	100	100	100	100	100	100
Net Profit / (Loss)	-150	-50	0	100	100	100	100

Payoff Chart



Options Terminology

- **Open Interest**

The total number of outstanding contracts on a given series or for a given underlying at a particular point in time

- **Exercise**

Invoke the rights approved to buyer of option

- **Assignment**

When the buyer of an option exercises his right to buy / sell, a randomly selected option seller (at the client level) is assigned the obligation to honor the underlying contract.

- **European Option**

Can be exercised only on the expiration date
e.g. Index options

- **American Option**

Can be exercised any time on or before the
expiration date
e.g. Stock options

- **In the money options**

It is an option that will lead to a positive cash flow to buyer when exercised

Call option is in the money when CMP is higher than strike

Put option is in the money when CMP is lower than strike

- **At the money options**

It is an option that will lead to a zero cash flow to buyer when exercised

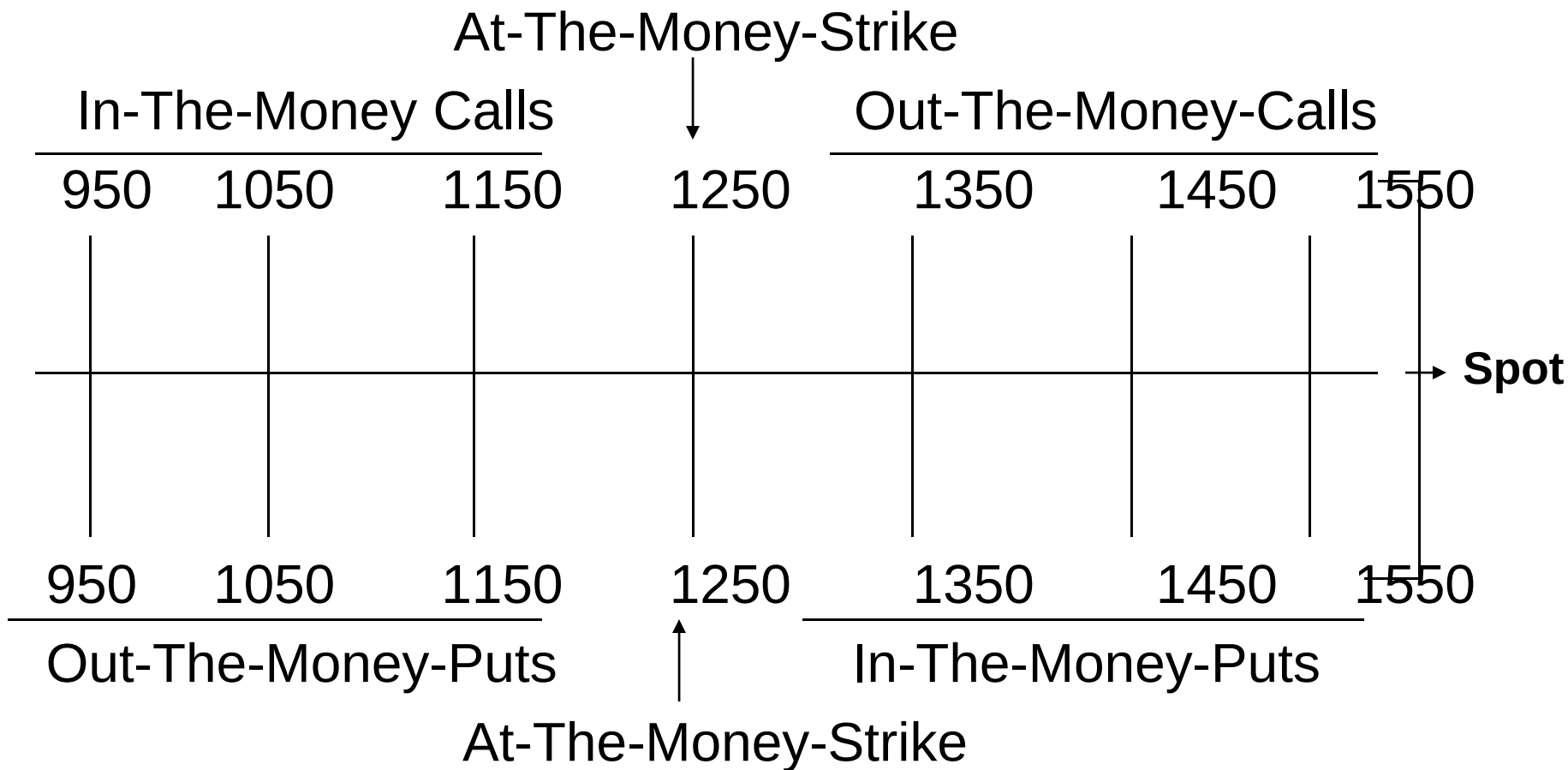
Options are at the money when CMP is equal to strike

- **Out of the money options**

It is an option that will lead to a negative cash flow to buyer when exercised, however OTM options can never be exercised / assigned

Call option is out of money when CMP is lower than strike

Put option is out of money when CMP is higher than strike



- **Intrinsic Value (IV)**

Difference between spot and strike

ITM has IV, ATM and OTM have zero IV

- **Time Value (TV)**

Difference between the premium and intrinsic value

ITM have both IV and TV, ATM and OTM have only TV

Longer the expiry more the TV, on expiry TV is 0

Options Pricing

- Primarily two methods used :

- **Black Scholes method**

- **Cox – Ross method**

- *Find attached calculator*

Factors affecting options price

- **Stock price**

Call options - more valuable with the rise in price and less valuable with the fall in price

Put options - more valuable with the fall in price and less valuable with the rise in price

- **Strike price**

Call options - more valuable at the lower strike and less valuable at the higher strike

Put options - more valuable at the higher strike and less valuable at the lower strike

- **Risk free interest rate**

Call option premium increases with rise in interest rates

Put option premium decreases with rise in interest rates

- **Time to expiry**

Options are more valuable when the time to expiration is more

- **Dividend**

Stock price reduces on the ex – dividend date.
This has a –ve effect on calls and +ve effect on puts

- **Volatility**

It is a measure of risk, uncertainty or the variability in the future price of a stock

Higher volatility reflects greater expectations of fluctuations in either direction for a stock

Options are more valuable with increase in volatility

Not possible to anticipate future volatility,
however two ways to estimate the volatility:

Historical volatility

Implied volatility

It is the market's estimate of how volatile
the stock will be from the present up to
expiry

Options Greeks

- **Delta**

Ceteris Paribus (stock price, risk free interest rate, strike price, time to expiry and volatility):-

Delta of an option indicates how much the premium will change for a unit change in the price

For an option with a delta of 0.50, the premium of option will change by 50 paise for a Re 1/- change in the price of stock

Delta is 0.50 for ATM options, as the option becomes ITM the value of delta increases and it decreases as the option becomes OTM

Delta indicates that OTM options are less sensitive to price change as compared to ATM and ITM options

Delta is positive for bullish positions (long futures, long call, short put) and negative for bearish positions (short futures, long put and short call)

Delta for call options varies from 0 to +1

Delta for put options varies from -1 to 0

Delta for long futures is +1

Delta for short futures is -1

- **Theta**

Theta shows how much value the option will lose after one day with all the parameters remaining same

Theta is always negative (positive) for the buyer (seller) of option, as the value of option loses value each day if the anticipated view is not realized

Theta of one month Reliance 420 call option is 1

Spot = 410

Call Premium = 15

Ceteris Paribus and one day passes, the value for RIL 420 call option will reduce by Re 1/-

- **Vega**

Vega indicates how much the option premium will change for a unit change in volatility of the spot

Volatility increase is advantageous to the buyer of option (i.e. vega is +ve) and disadvantageous to the seller (i.e vega is –ve)

Vega of 1 month Reliance 420 Call option is 1, when volatility is 35

Spot = 410

Call Premium = 15

Ceteris Paribus and volatility moves to 36, call premium will increase to 16

- **Rho**

Rho indicates the change in value of an option for 1 unit change in interest rate

Interest rates are almost constant over the expiry hence are considered insignificant

- **Gamma**

Gamma indicates how much the delta changes for a unit change in the price of the underlying

When delta change is known, then it becomes easy in finding how much the next premium change will be for a unit change in the spot price, i.e it indicates the rate of change in premium

Gamma = 0.01, Delta = 0.50, Spot = 100

Now when Spot increases to 101, the new delta will be $0.50 + 0.01 = 0.51$

Rate of change in the premium has increased

Gamma is positive for option buyers and negative for option sellers

Gamma is unimportant for long maturity options

For short maturity options gamma is high and option premium changes fast with spot changes

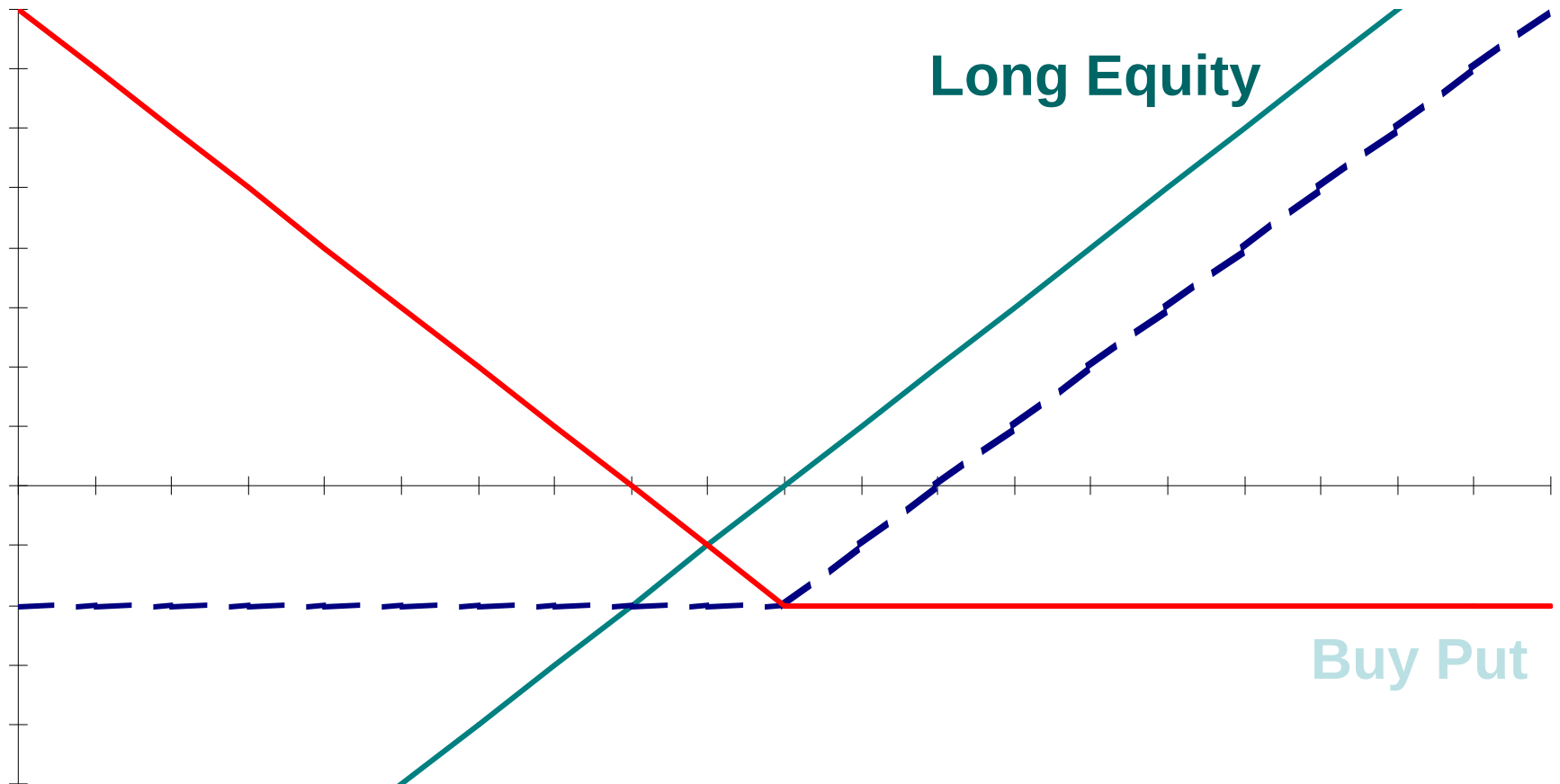
Uses of Options

- Hedging
- Maintain Exposure post selling
- Cash Management
- Exposure prior to actual new inflows
- Determine profit booking level
- Determine buying level

Hedging

- Hedging can also be initiated by buying a Put Option, which will protect the downside
- This strategy will keep downside limited, and at same time keeps the upside open

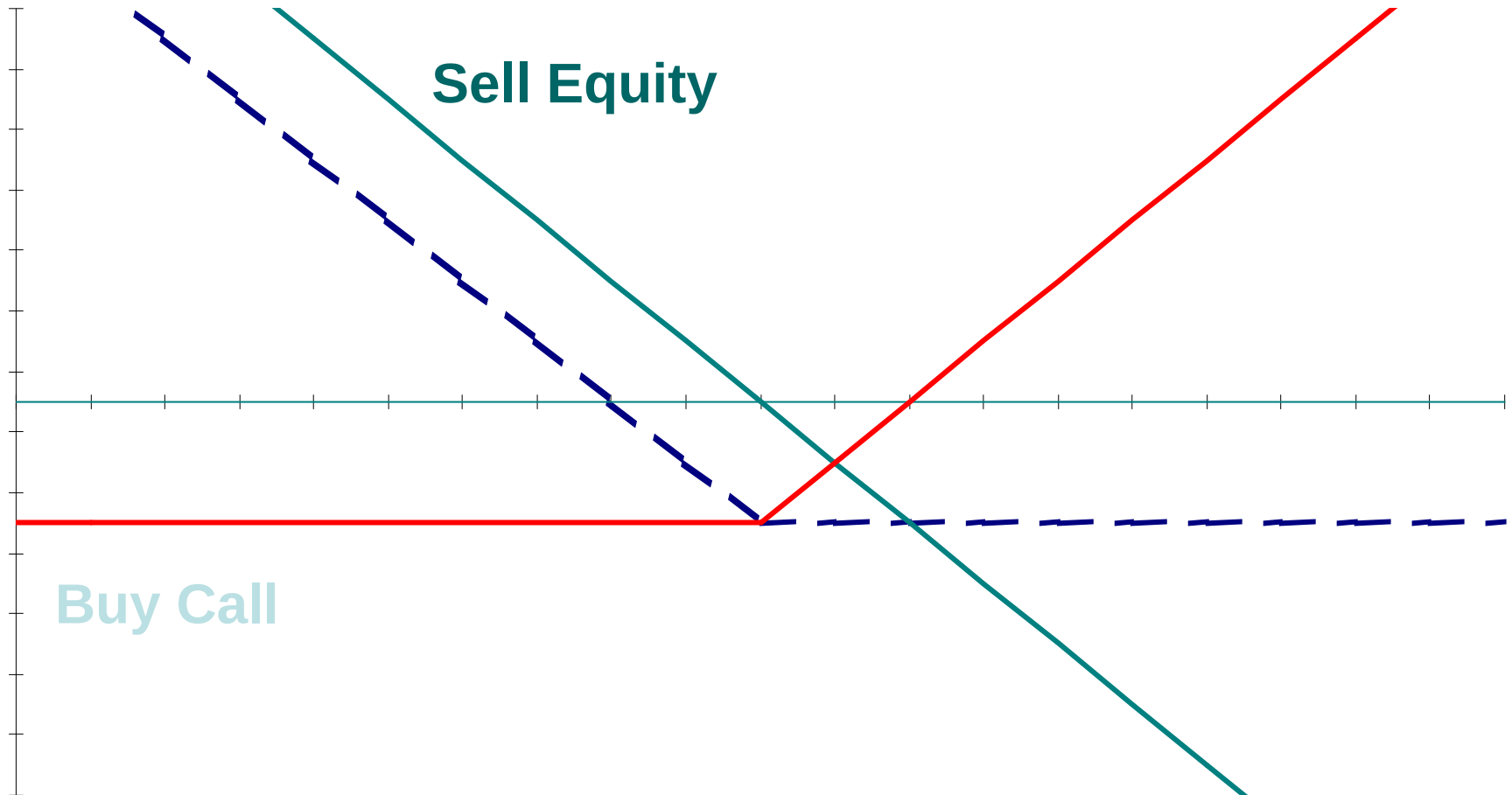
Put Hedging Payoff



Maintain Exposure post selling

- Believe that the current levels are an ideal level to exit, but fear that what if markets goes up from here, then you miss the upside
- Sell Equity and simultaneously Buy Call option
- If as per your view markets goes down, you benefit by equity sell off, but lose the premium on Call option, which is very small component
- But if markets go up then your exposure via call will help you ride the upside

Payoff



Cash Management

- During redemption pressures or during times of tight cash position, equity positions can be shifted to Buy Call Options
- By doing this, exposure is maintained at a small premium, thus releasing much needed cash

Exposure

- Exposure can be initiated via Buy Call Options before the actual fresh fund inflows
- Opportunity not missed if markets move up

Fix profit booking level

- You can fix or predetermine the level at which you want to exit a particular stock or portfolio
- This can be done by Selling a Call Option
- If the price moves up, you gain on the underlying and if the underlying price stays below the strike price then you earn the premium of call sold

Fix buying level

- You can fix or predetermine the level at which you want to enter a particular stock or build up a portfolio
- This can be done by Selling a Put Option
- If the price moves down, you get an opportunity to buy at lower prices and if the underlying price stays above the strike price then you earn the premium of Put sold

Corporate Announcements

- In case of a corporate announcement the exchange adjusts the Futures and Options positions, so that the contract value of the positions on the cum benefit day and the ex benefit day is the same

Dividend

- If the dividend yield is lower than 10% of spot, then there is no adjustment.
- Market adjusts option price considering dividend. Option pricing is calculated using Futures price instead of the Spot price in options calculator
- The Futures price start quoting at a discount to the spot by the dividend amount

- As per SEBI, if the dividend yield is more than 10% of the spot price on the dividend announcement day, then on ex dividend date the strike price of the options is reduced by the dividend amount, and
- MTM credit of the dividend amount is given to the long futures position, which in turn is debited from the short futures position

Bonus

- When a company declares bonus then the lot size for futures as well as options and strike price of the stock option is adjusted by the exchange as per the bonus ratio on ex-bonus day

Mergers & Demergers

- On the announcement of the record date the exact date of expiration would be informed by the exchanges.
- After the announcement of the Record Date no fresh contracts would be introduced.
- Un-expired contracts outstanding would be compulsorily settled.

Strategies

Strategy Guide - Table

Market Outlook Volatility Estimate	Bullish	Neutral	Bearish
Rising	Long Call Call Ratio Backspread	Long Straddle Long Strangle Long Strap Long Strip	Long Put Put Ratio Backspread
Neutral	Long Futures Long Semi Futures Bull Call Spread Bull Put Spread	Long Condor Short Condor Long Butterfly Short Butterfly	Short Futures Short Semi Futures Bear Put Spread Bear Call Spread
Falling	Short Put	Short Straddle Short Strangle Short Strap & Strip Put & Call Ratio Spread	Short Call

All the above strategies have same expiration

Risk – Return Profile

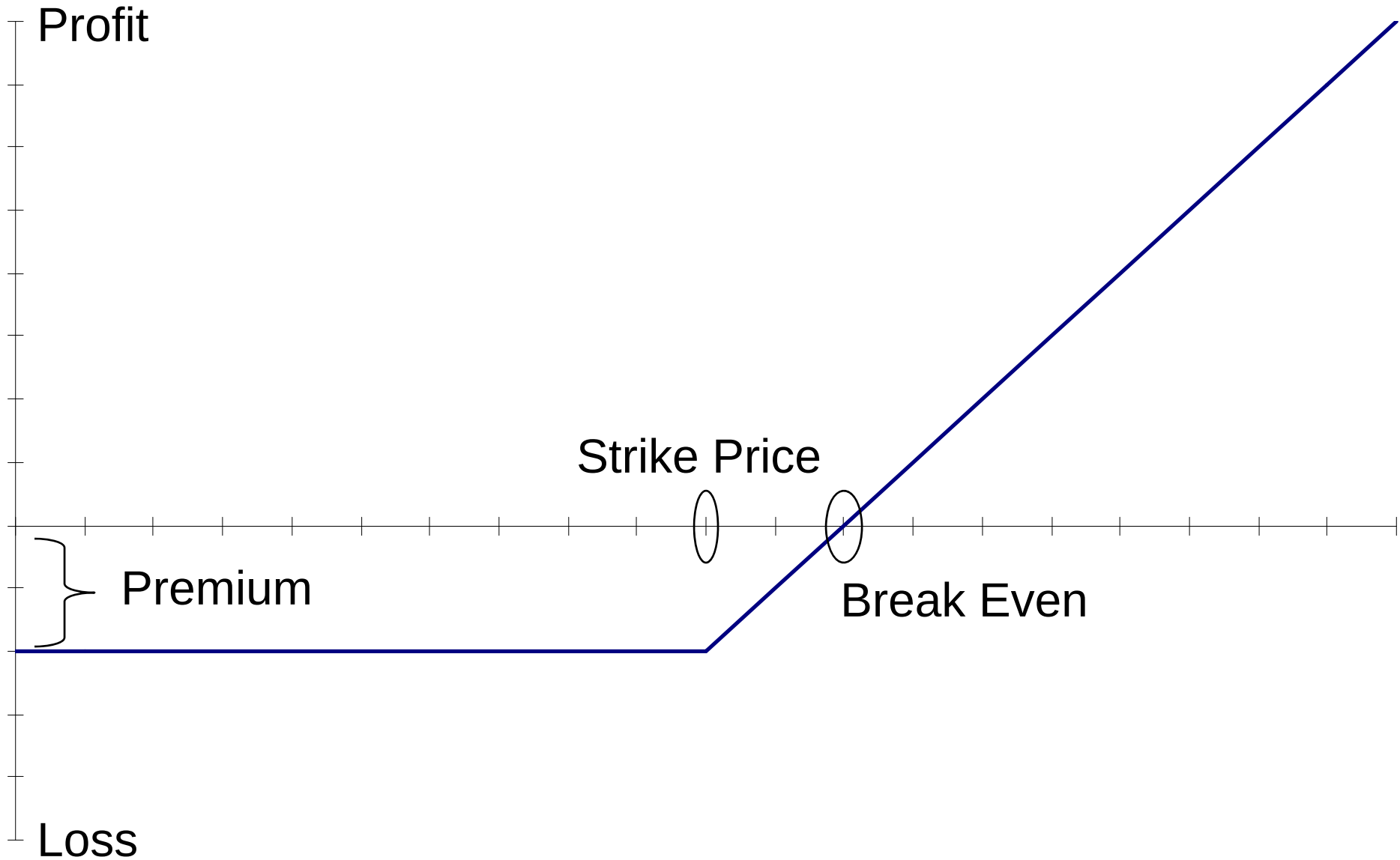
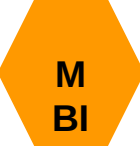
Return Risk	Limited	Unlimited
Limited	Bull Call Spread (18) Bull Put Spread (21) Long & Short Condor (44 & 50) Long & Short Butterfly (41 & 47) Bear Put Spread (86) Bear Call Spread (89)	Long Call & Put (4 & 72) Call Ratio Backspread (8) Long Straddle & Strangle (28 & 31) Long Strap & Strip (35 & 38) Put Ratio Backspread (76)
Unlimited	Short Put & Call (24 & 92) Short Straddle & Strangle (53 & 56) Short Strap & Strip (60 & 63) Put Ratio Spread (69) Call Ratio Spread (66)	Long Futures (11) Long Semi Futures (15) Short Futures (79) Short Semi Futures (83)

Figures in brackets are page numbers

Long Call

View	Comment
Profit	Unlimited, Increases as the spot price increases
Loss	Limited to the premium paid
Breakeven	Strike price + premium
Time Decay	Hurts
Use	Very bullish outlook
Volatility	Volatility increase helps the position
Margin	No

Long Call - Payoff



Long Call – Variant

Protective Put

- Have Underlying or Long Futures, and
Buy Put

(Downside Risk is hedged)

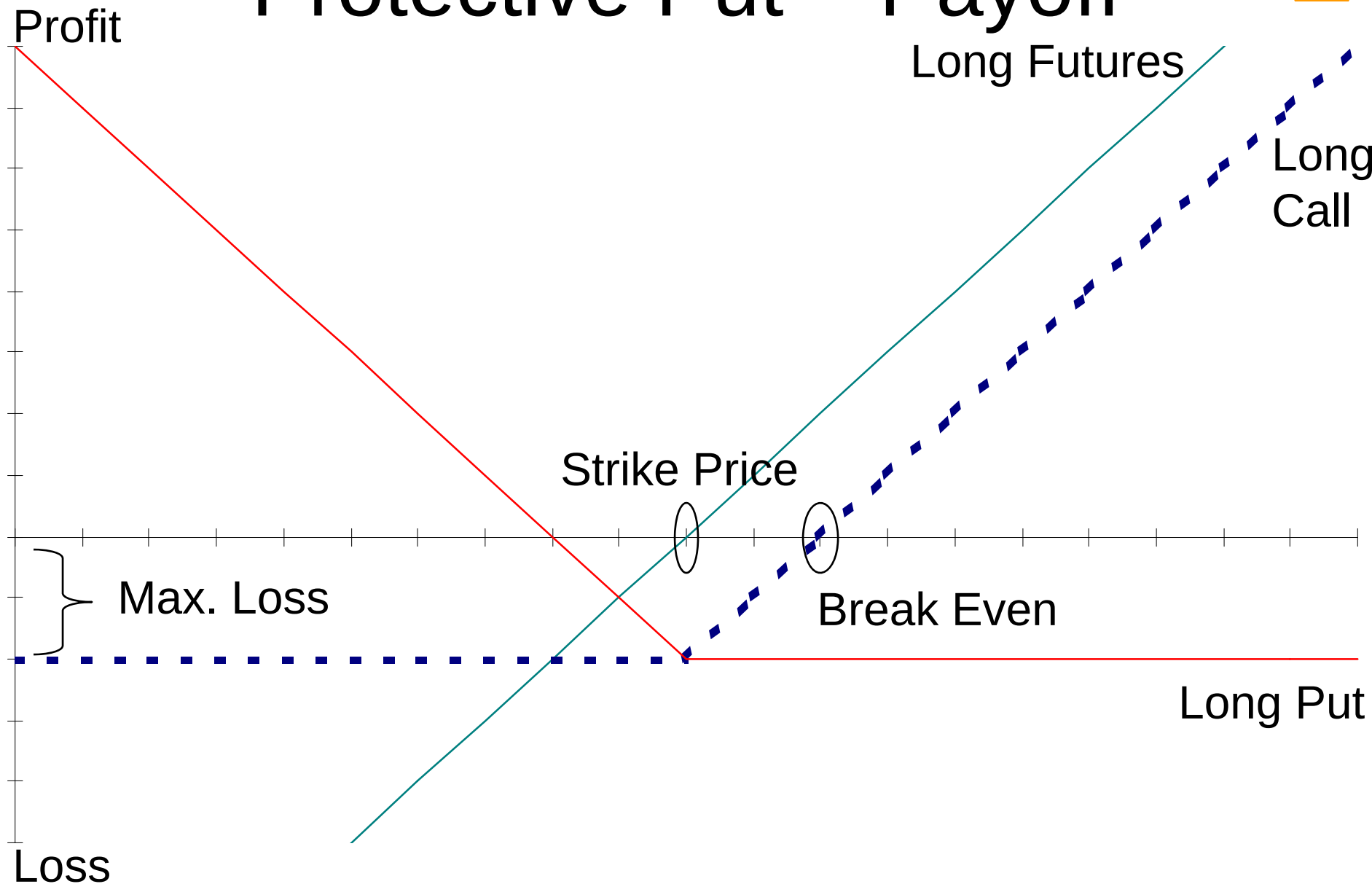
Max. Loss :

If Futures < Put strike = Premium - (Strike – Futures)

If Futures > Put strike = (Futures - Strike) + premium

Breakeven = Put Strike + Max. Loss

Protective Put – Payoff



Call Ratio Backspread

View	Comment
Profit	Increases as the spot price increases
Loss	$(B - A) + (\text{debit premium})$ <u>or</u> $-(\text{credit premium})$
Breakeven	$B + \text{Max. Loss}$
Time Decay	Hurts
Use	Market is near B and outlook is bullish
Volatility	Volatility increase helps the position
Margin	Yes

Call Ratio Backspread (CRB)

Formation

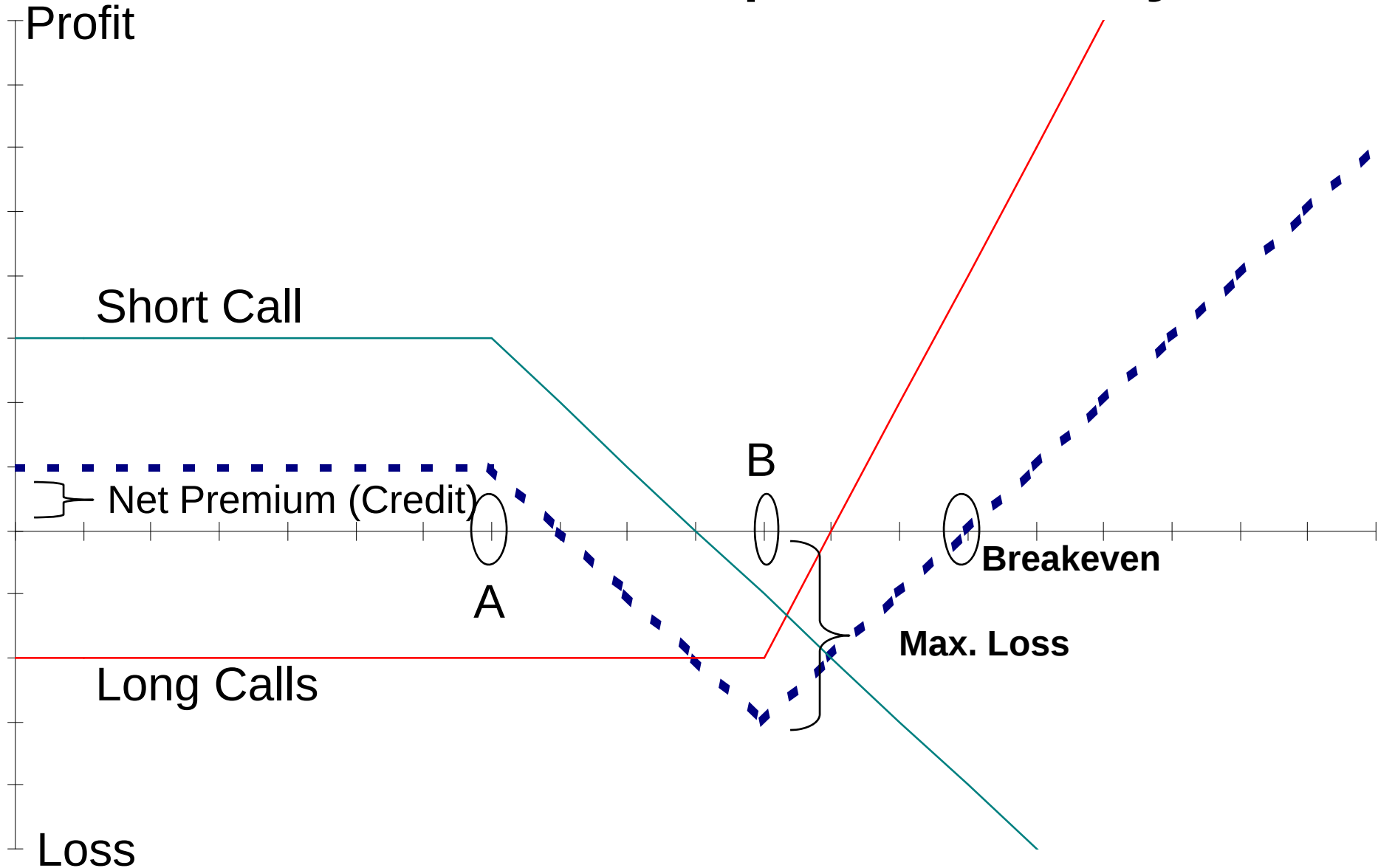
- Sell a lower strike (A) call and,
Buy 2 higher strike (B) calls

Variant

- Sell a lower strike (A) put,
Buy 2 higher strike (B) calls and,
Short Futures

Call Ratio Backspread - Payoff

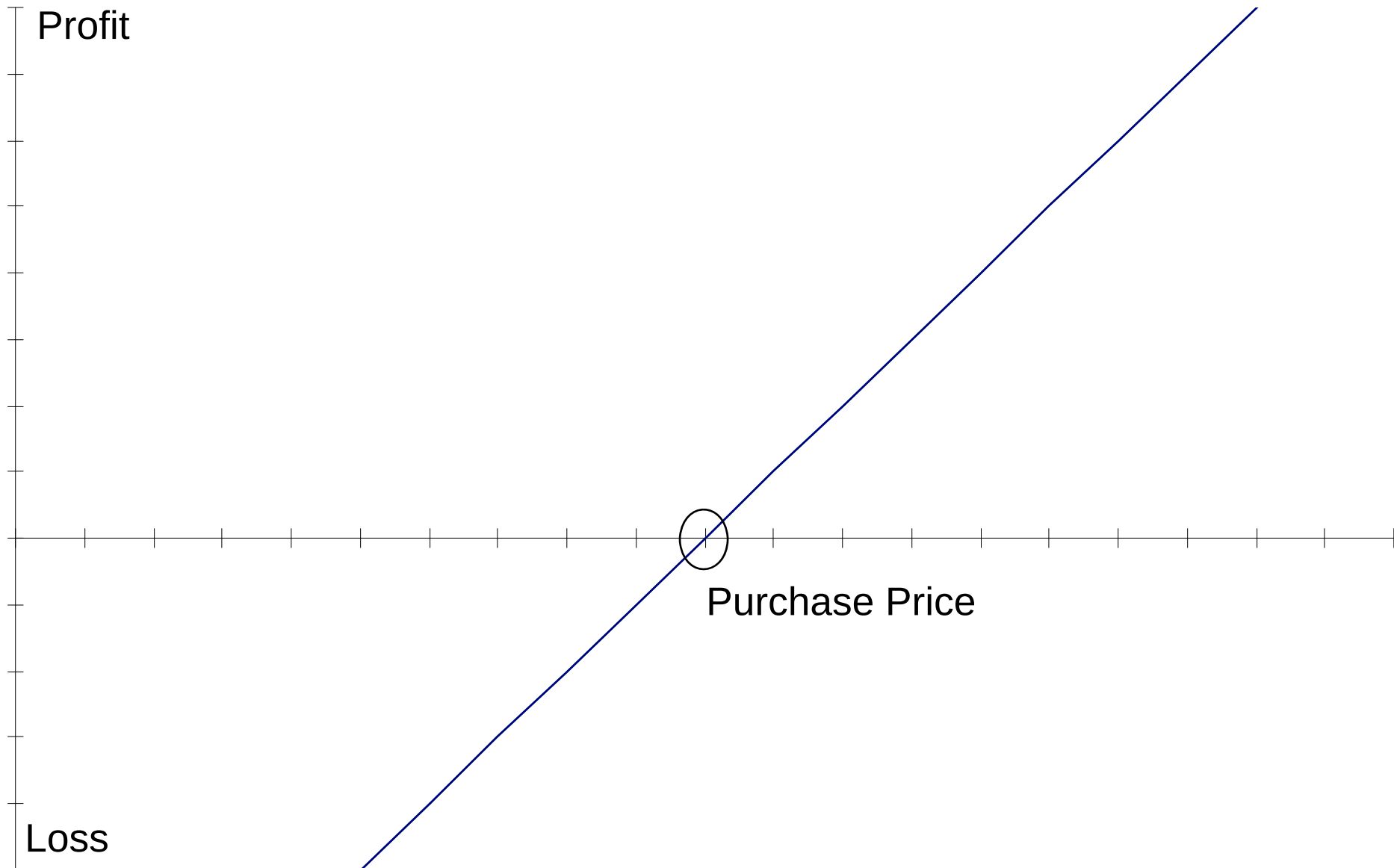
M
BI



Long Futures

View	Comment
Profit	Increases as the spot price increases
Loss	Increases as the spot price decreases
Breakeven	Purchase price + Brokerage
Time Decay	No impact
Use	Very bullish outlook
Volatility	No impact
Margin	Yes

Long Futures – Payoff



Long Futures – Variant

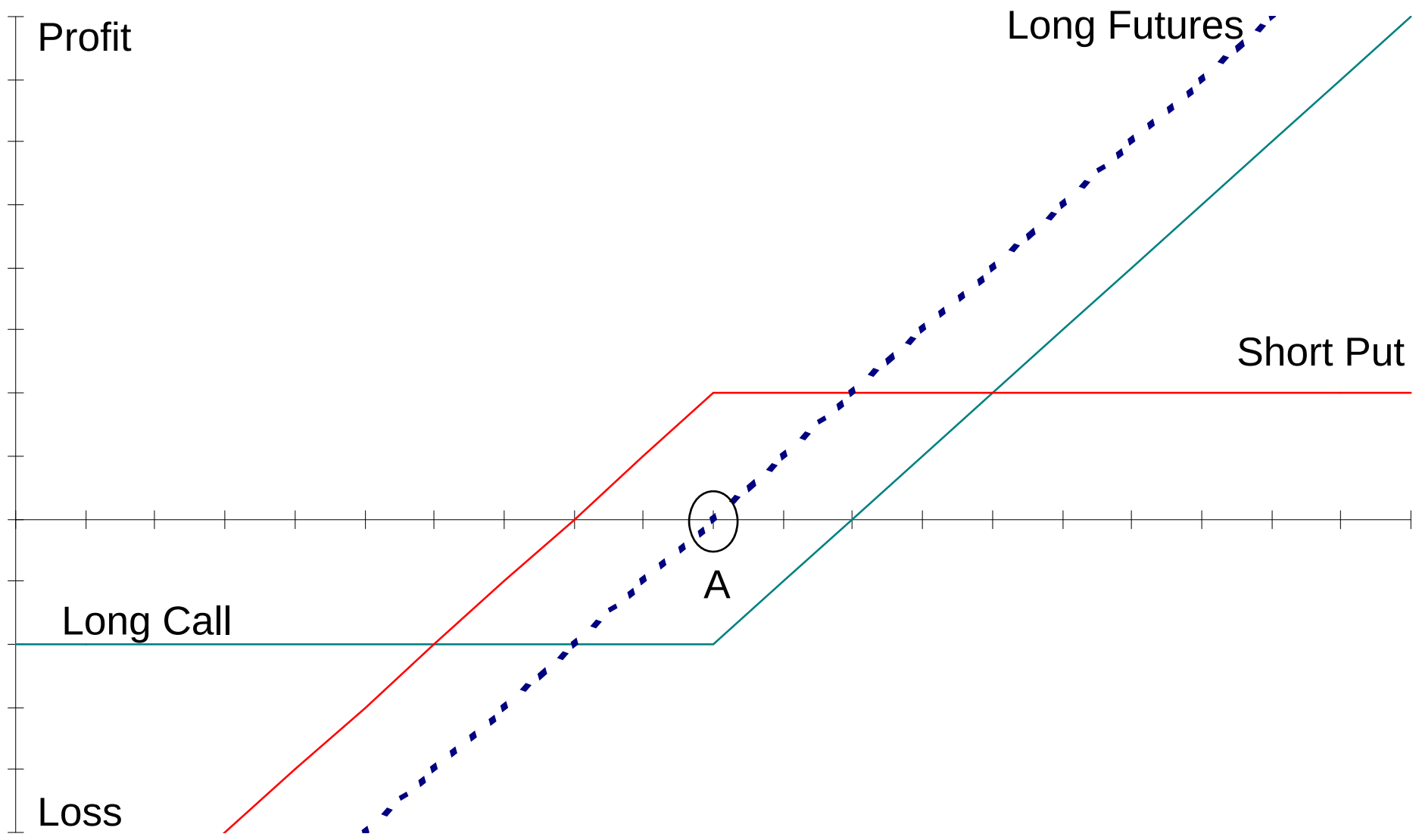
Formation

Buy Call A and Sell Put A

Going Long at

$A + \text{Call Premium} - \text{Put Premium}$

Long Futures – Variant Payoff



Long Semi – Futures

View	Comment
Profit	Increases as the spot price increases
Loss	Increases as the spot price decreases
Breakeven	Call Strike (B) + Premium debit <u>or</u> Put Strike (A) - Premium credit
Time Decay	Mixed – Hurts for Long Call and helps for Short Put
Use	Bullish outlook
Volatility	Neutral
Margin	Yes

Long Semi – Futures

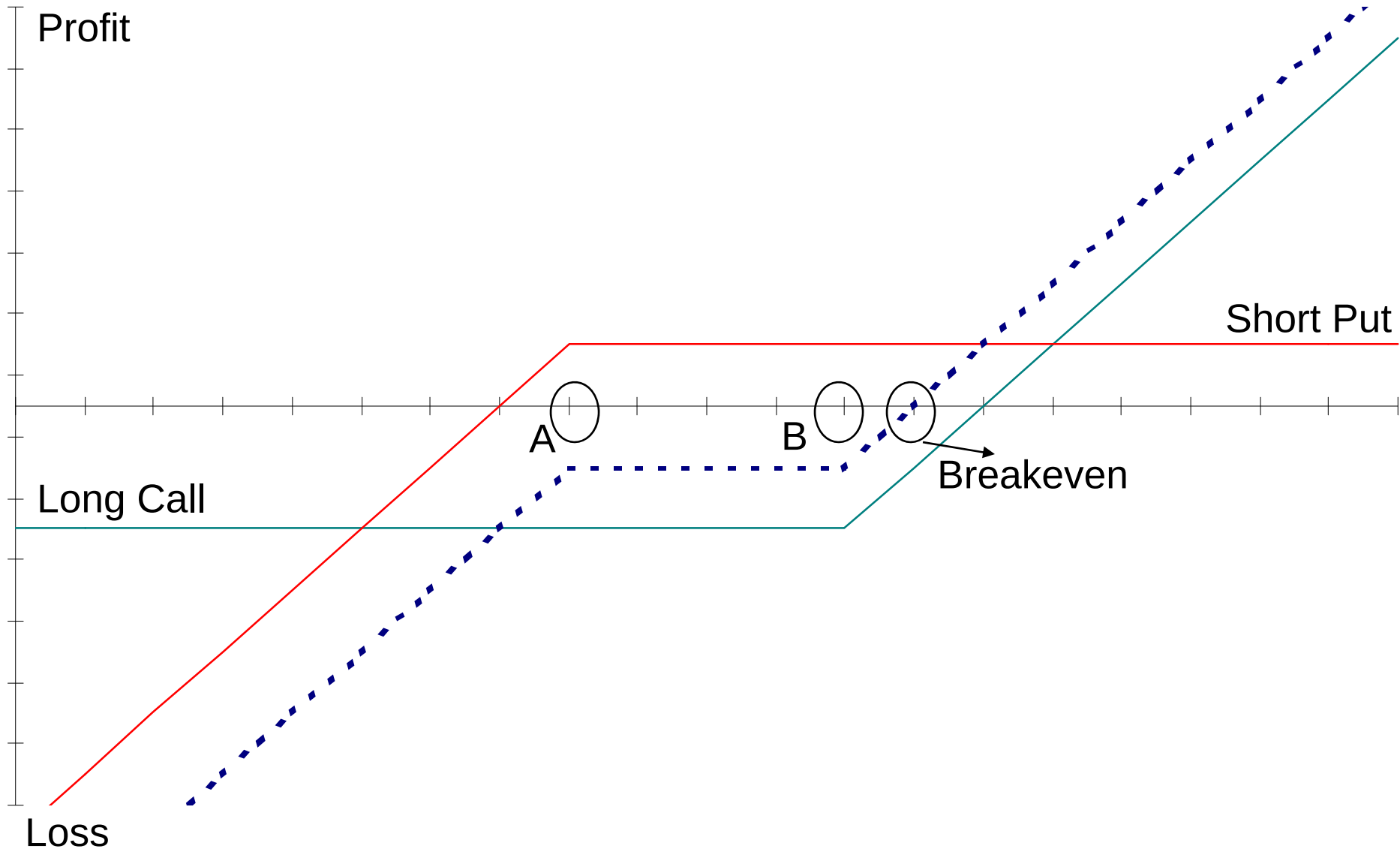
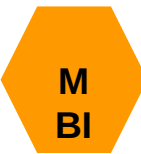
Formation

- Sell Put A and,
Buy Call B

Variant

- Sell Call A,
Buy Futures and,
Buy Call B

Long Semi Futures – Payoff



Bull Call Spread

View	Comment
Profit	Limited, Max. Profit = $(B - A) - \text{Net Premium}$
Loss	Limited, Max. Loss = Net Premium
Breakeven	Strike A + Max. Loss
Time Decay	Mixed – Hurts for Long Call and helps for Short Call
Use	Bullish outlook
Volatility	Neutral
Margin	Yes

Bull Call Spread

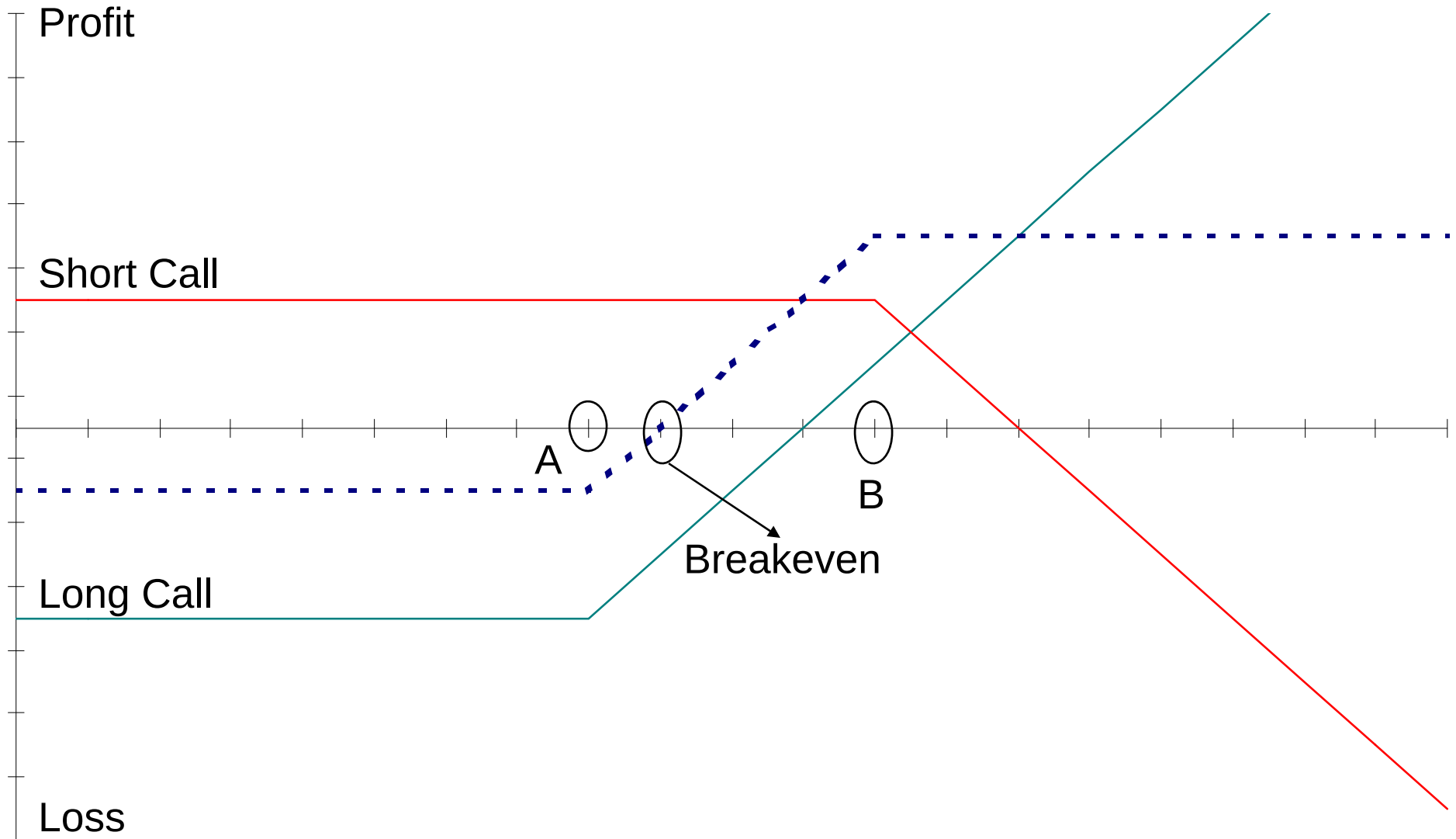
Formation

- Buy Call A and,
Sell Call B

Variant

- Buy Call A,
Sell Put B and,
Short Futures

Bull Call Spread – Payoff



Bull Put Spread

View	Comment
Profit	Limited, Max. Profit = Net Premium
Loss	Limited, Max. Loss = $(B - A) - \text{Net Premium}$
Breakeven	Strike A + Max. Loss
Time Decay	Mixed – Hurts for Long Put and helps for Short Put
Use	Bullish outlook
Volatility	Neutral
Margin	Yes

Bull Put Spread

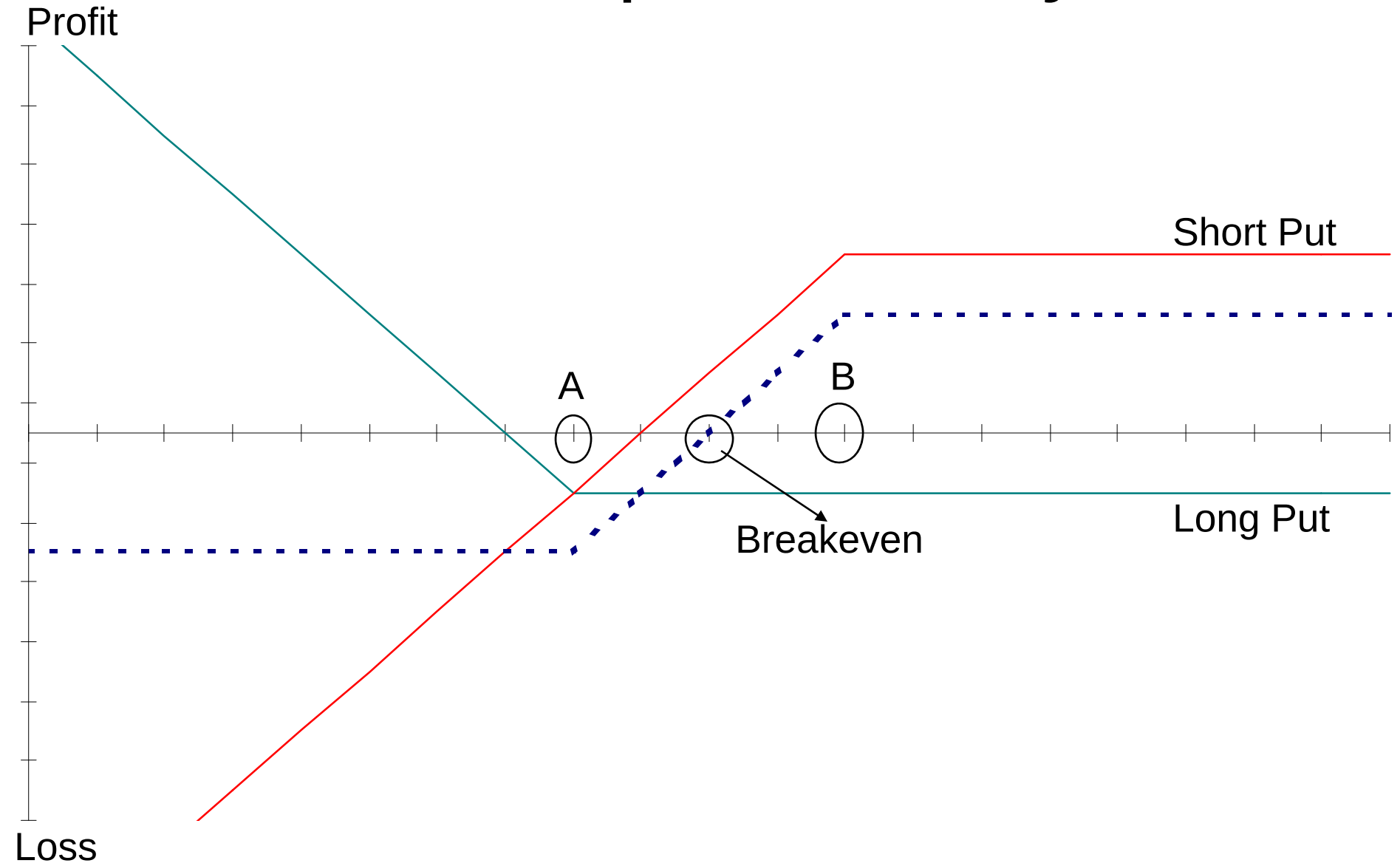
Formation

- Buy Put A and,
Sell Put B

Variant

- Buy Put A,
Sell Call B and
Long Futures

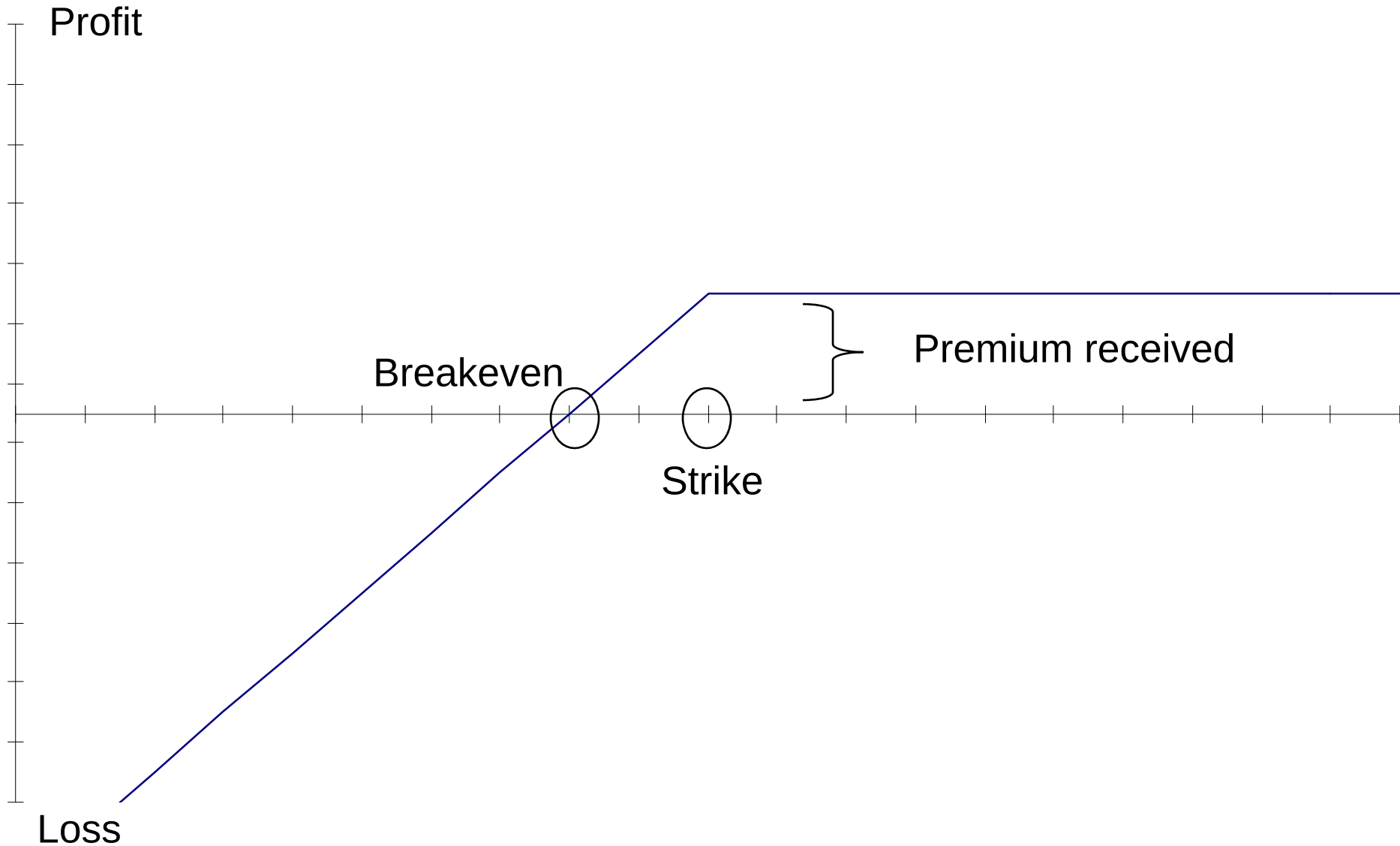
Bull Put Spread – Payoff



Short Put

View	Comment
Profit	Limited to the premium received
Loss	Unlimited, increases as the spot price decreases
Breakeven	Strike price – Premium
Time Decay	Helps
Use	Bullish outlook
Volatility	Volatility decrease helps the position
Margin	Yes

Short Put – Payoff



Short Put – Variant

Covered Call

- Have Underlying or Buy Futures, and Write a Call

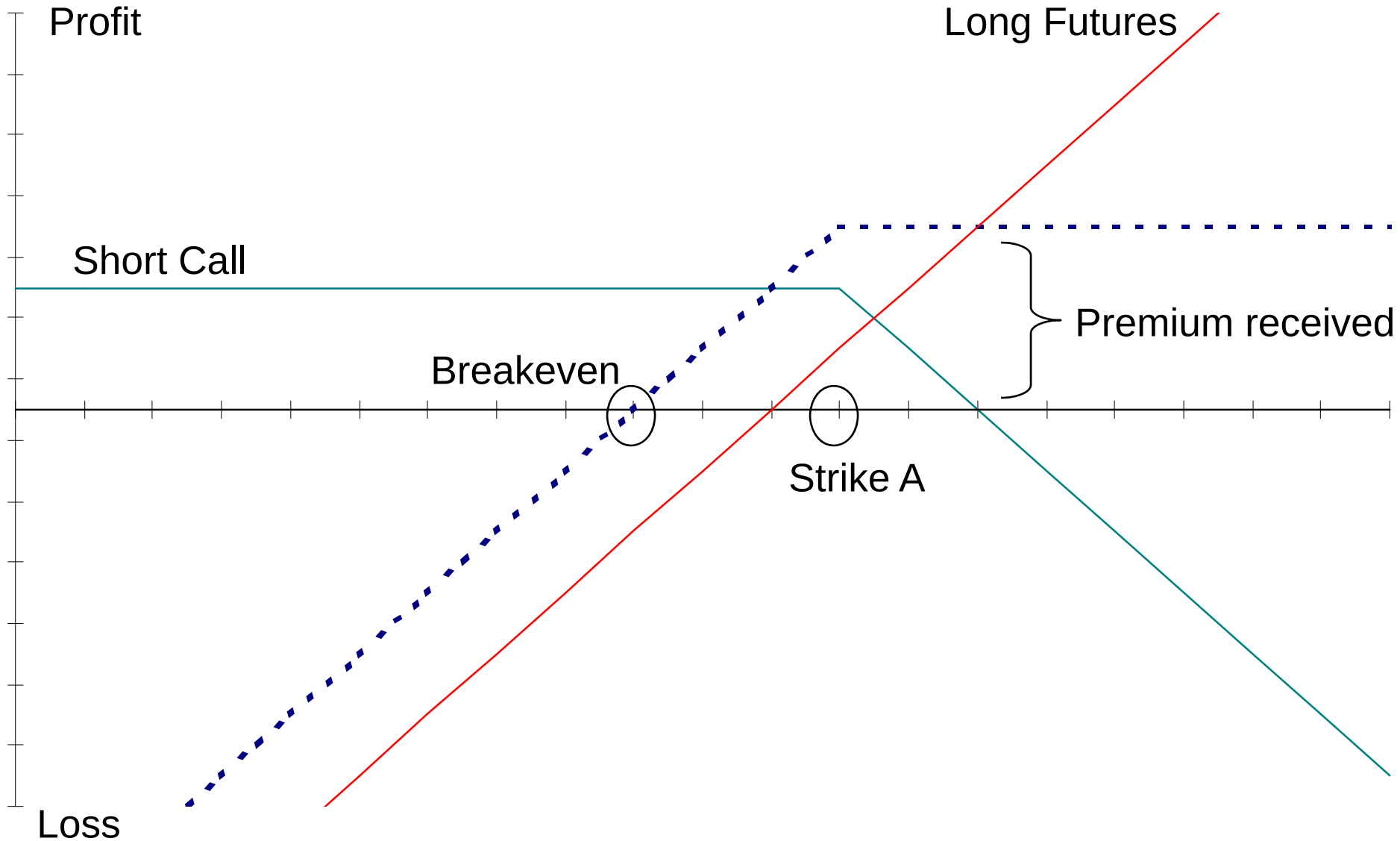
Max. Profit :

Futures < Strike = Prem. + (Strike – Futures)

Futures > Strike = Prem. – (Futures – Strike)

Breakeven = Call Strike – Max. Profit

Short Put Variant – Payoff



Long Straddle

View	Comment
Profit	Unlimited
Loss	Limited to the net premium paid
Breakeven	Low BEP = Strike price – net premium High BEP = Strike price + net premium
Time Decay	Hurts
Use	Expecting a large breakout, Uncertain about the direction
Volatility	Volatility increase improves the position
Margin	No

Long Straddle

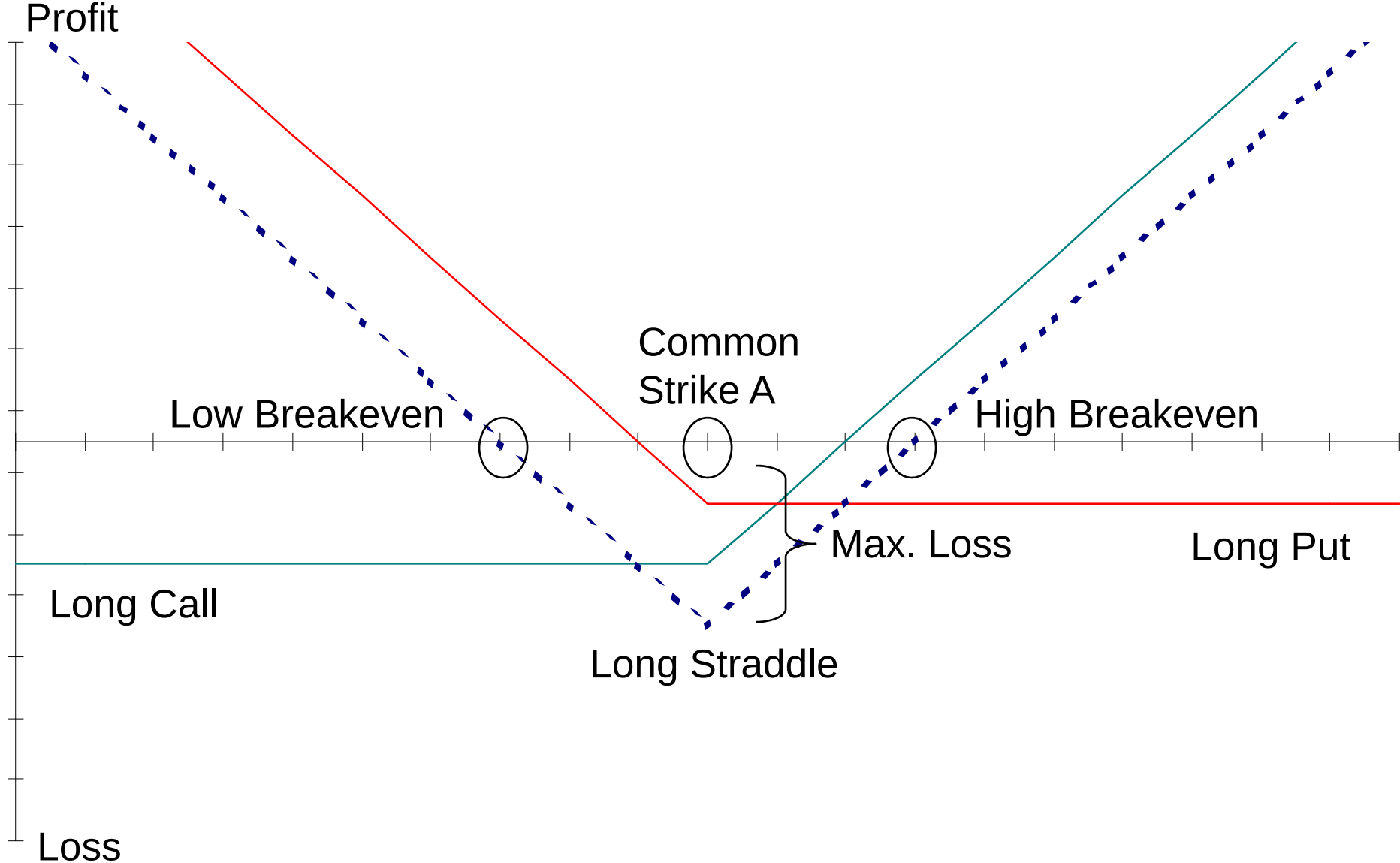
Formation

- Buy Call A and,
Buy Put A

Variant

- Buy 2 Calls A & Short Futures or
- Buy 2 Puts A & Long Futures

Long Straddle – Payoff



Long Strangle

View	Comment
Profit	Unlimited
Loss	Limited, $\text{Premium} - (B - A)$, if Call Strike is A Limited to premium, if Call Strike is B
Breakeven	Low BEP = $A - \text{Loss}$ High BEP = $B + \text{Loss}$
Time Decay	Hurts
Use	Expecting a large breakout, Uncertain about the direction
Volatility	Volatility increase improves the position
Margin	No

Long Strangle

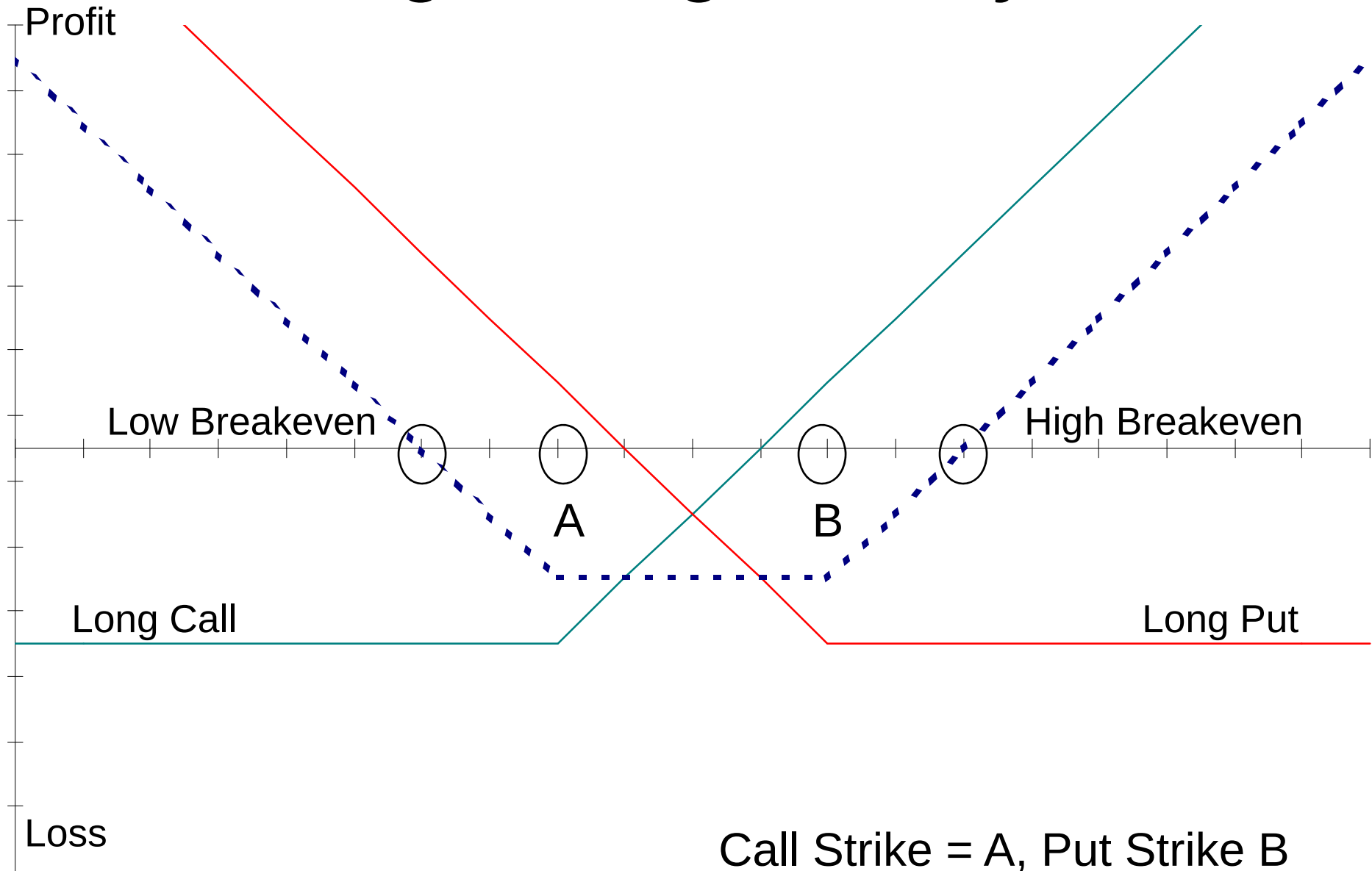
Formation

- Buy Call A and Buy Put B

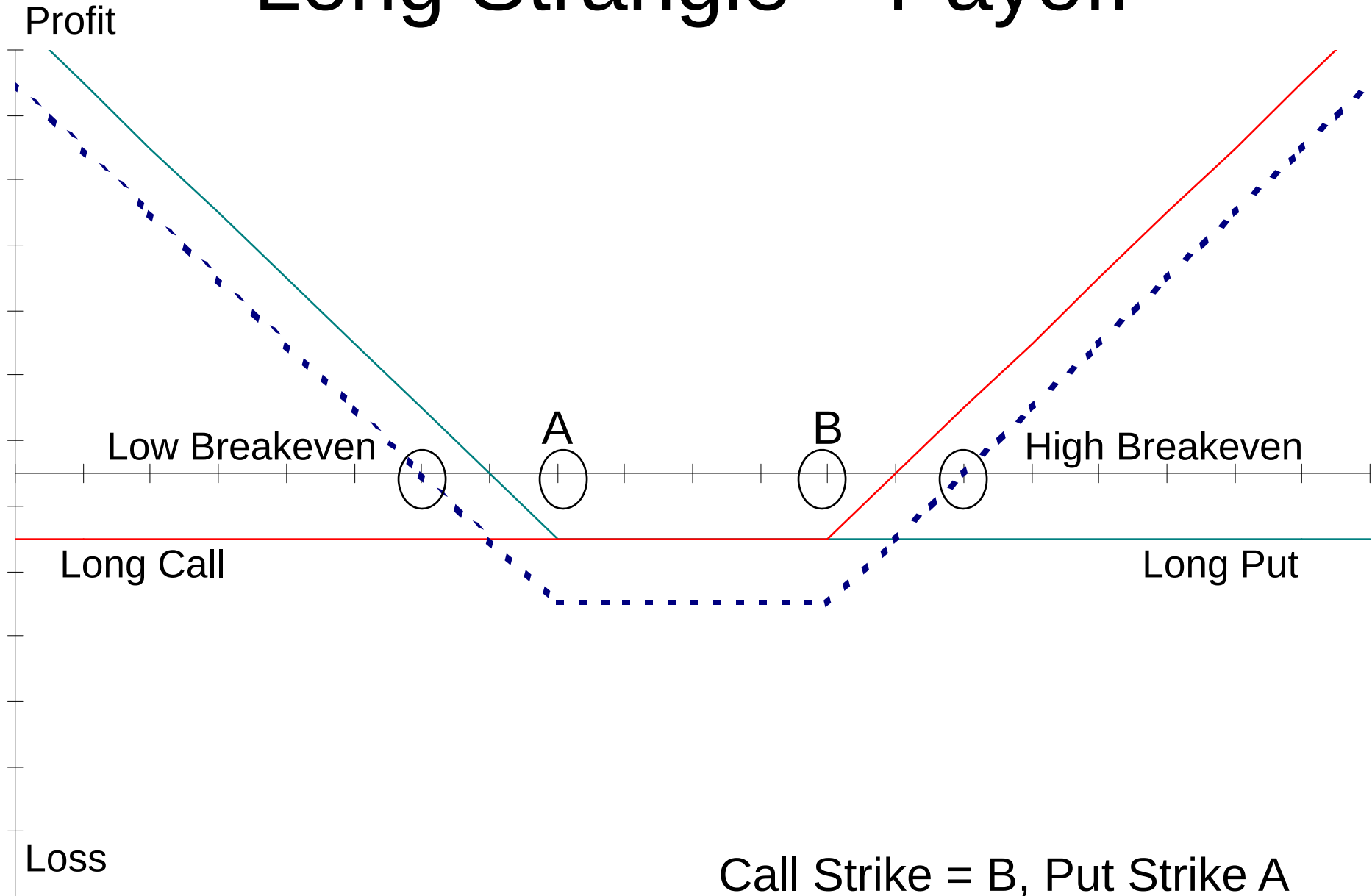
Variants

- Buy Put A and Buy Call B
- Buy Put A, Buy Put B and Long Futures
- Buy Call A, Buy Call B and Short Futures

Long Strangle – Payoff



Long Strangle – Payoff



Long Strap

View	Comment
Profit	Unlimited
Loss	Limited to the net premium paid
Breakeven	Low BEP = Strike price – net premium High BEP = Strike price + (net premium / 2)
Time Decay	Hurts
Use	Expecting a large breakout, Uncertain about the direction. Increase in the stock more likely.
Volatility	Volatility increase improves the position
Margin	No

Long Strap

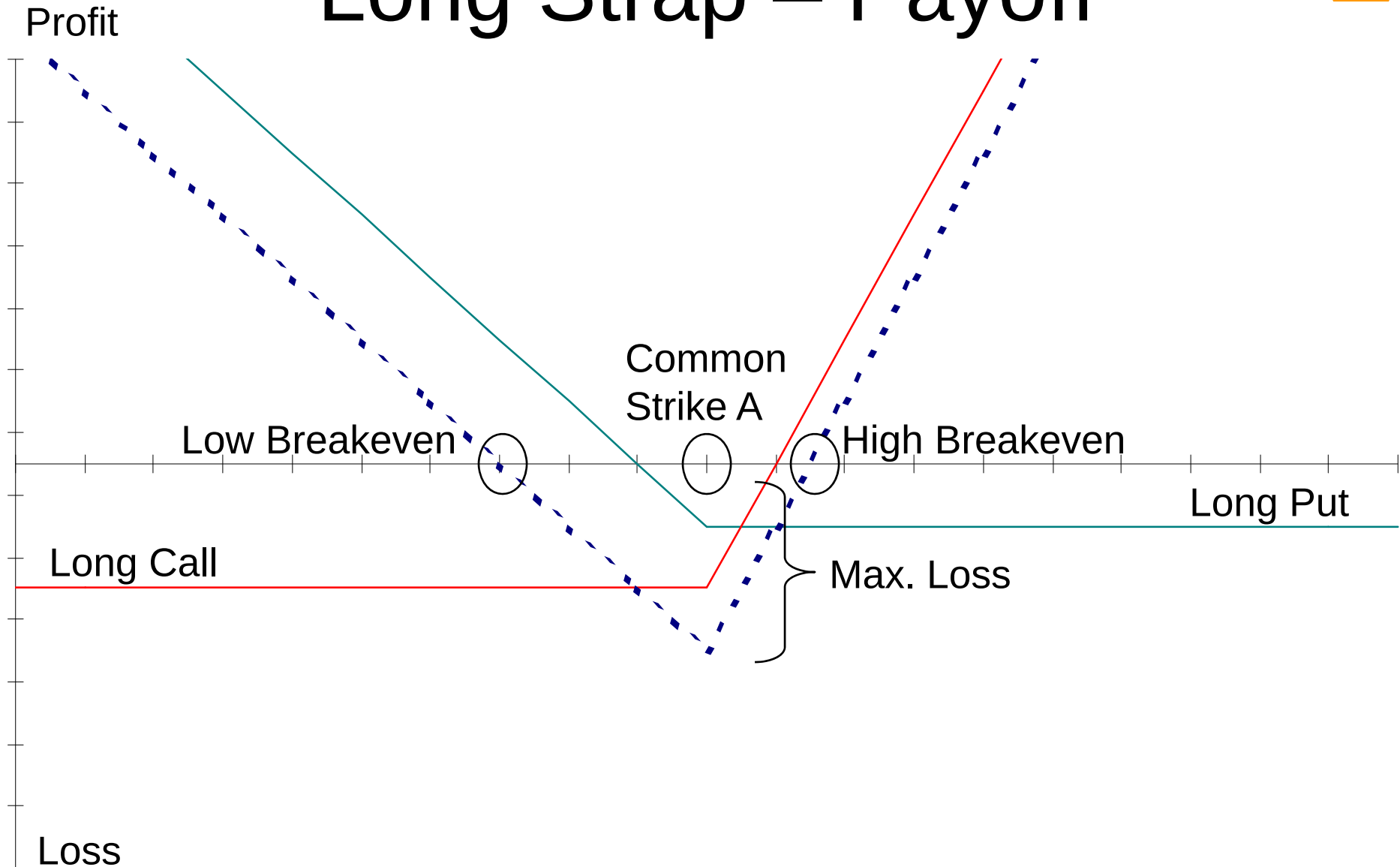
Formation

- Buy 2 Calls A and,
Buy Put A

Variant

- Buy 3 Calls A & Short Futures

Long Strap – Payoff



Long Strip

View	Comment
Profit	Unlimited
Loss	Limited to the net premium paid
Breakeven	Low BEP = Strike price – (net premium / 2) High BEP = Strike price + net premium
Time Decay	Hurts
Use	Expecting a large breakout, Uncertain about the direction. Decrease in the stock more likely.
Volatility	Volatility increase improves the position
Margin	No

Long Strip

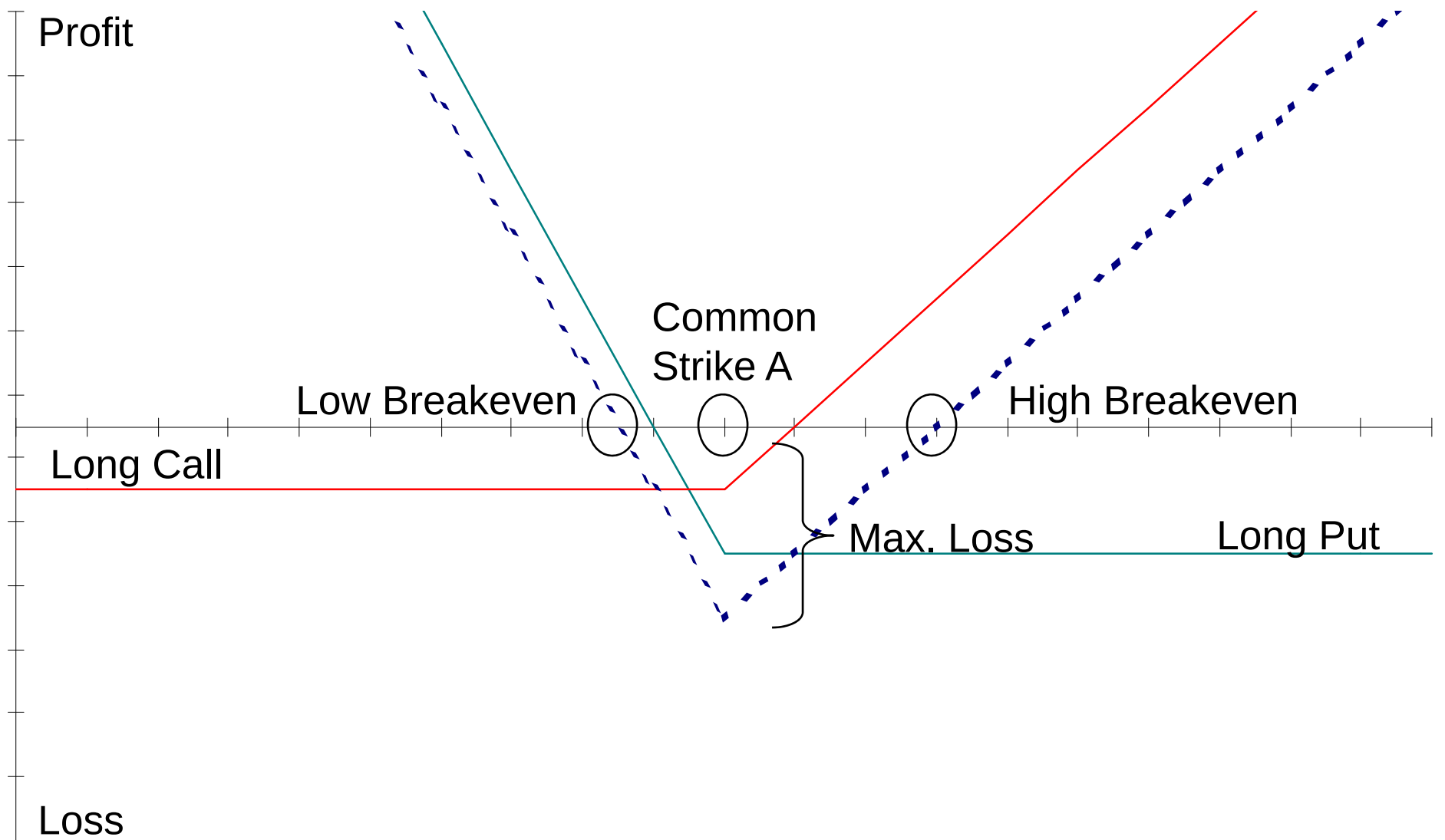
Formation

- Buy 2 Puts A and,
Buy Call A

Variant

- Buy 3 Puts A & Long Futures

Long Strip – Payoff



Long Butterfly

View	Comment
Profit	Limited to $[(B - A) \text{ or } (C - B)] - \text{Net premium}$
Loss	Limited to the net premium paid
Breakeven	Low BEP = Middle Strike – Profit High BEP = Middle Strike + Profit
Time Decay	Neutral
Use	Large stock price movement unlikely. Often used as a follow up strategy
Volatility	Neutral
Margin	Yes

Long Butterfly

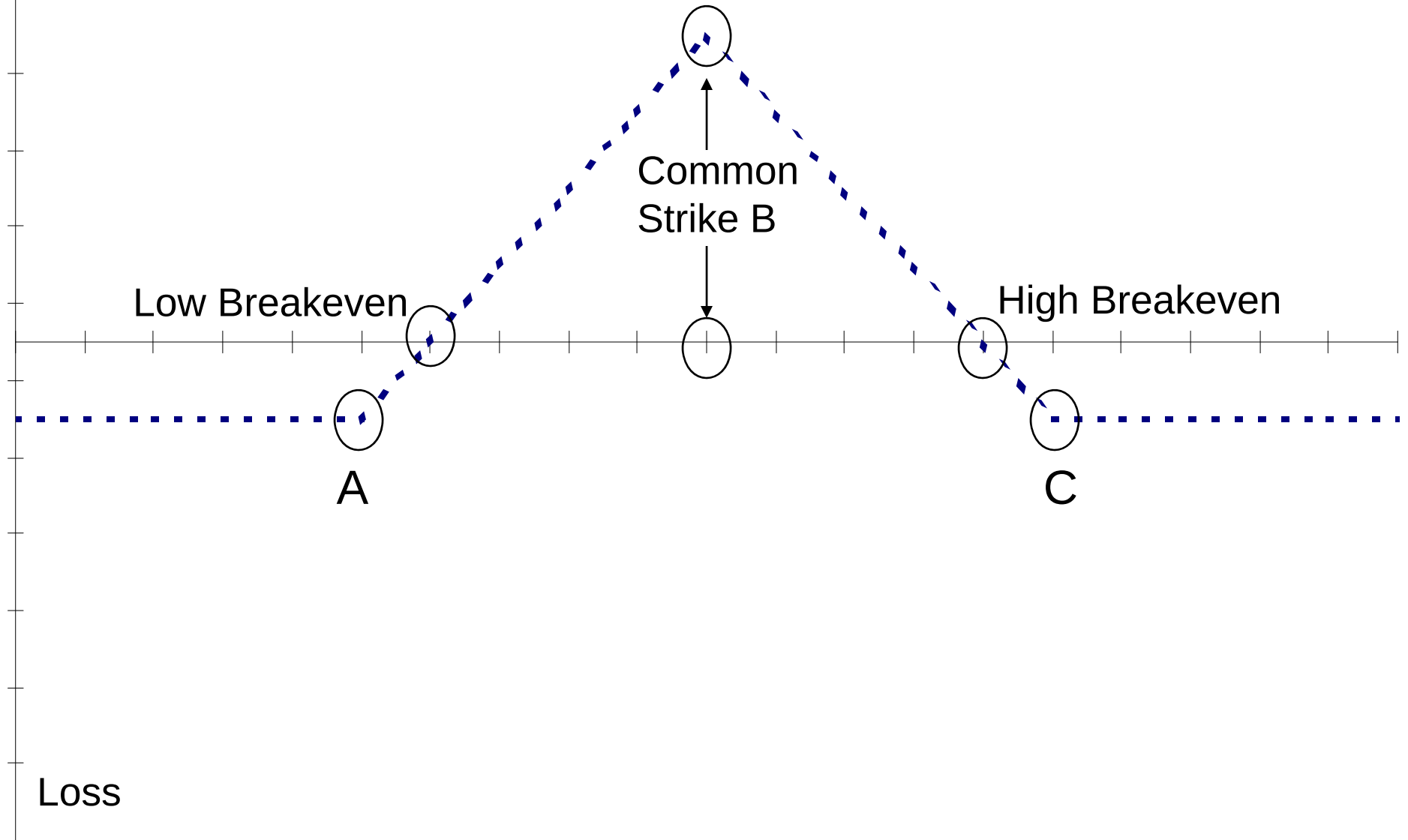
Formation

- Buy Call A, Sell 2 Calls B, Buy Call C

Variants

- Buy Put A, Sell 2 Puts B, Buy Put C
- Buy Call A, Sell Put & Call B, Buy Put C
- Buy Put A, Sell Put & Call B, Buy Call C

Long Butterfly – Payoff



Long Condor

View	Comment
Profit	Limited, Maximum when spot is between B & C
Loss	Limited, Maximum when spot is $< A$ & $> D$
Breakeven	Low BEP = $B - \text{Profit}$ High BEP = $C + \text{Profit}$
Time Decay	Neutral
Use	Large stock price movement unlikely. Often used as a follow up strategy
Volatility	Neutral
Margin	Yes

Long Condor

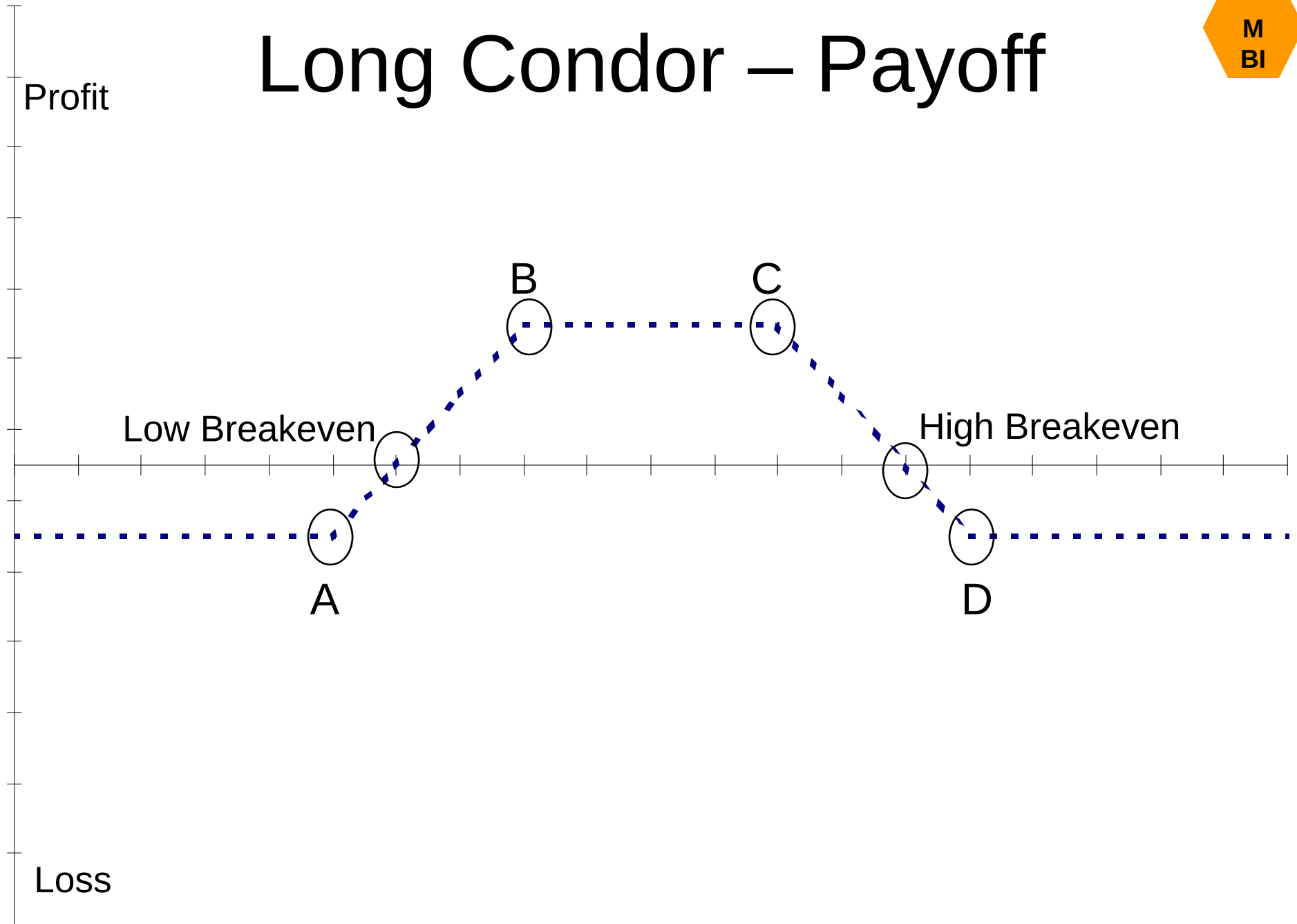
Formation

- Buy Call A, Sell Call B & C, Buy Call D

Variants

- Buy Put A, Sell Put B & C, Buy Put D
- Buy Put A, Sell Put B & Call C, Buy Call D
- Buy Call A, Sell Call B & C, Buy Put D

Long Condor – Payoff



Short Butterfly

View	Comment
Profit	Limited to the net premium received
Loss	Limited to $[(B - A) \text{ or } (C - B)] - \text{Net premium}$
Breakeven	Low BEP = Middle Strike – Loss High BEP = Middle Strike + Loss
Time Decay	Neutral
Use	Large stock price movement expected. Often used as a follow up strategy
Volatility	Neutral
Margin	Yes

Short Butterfly

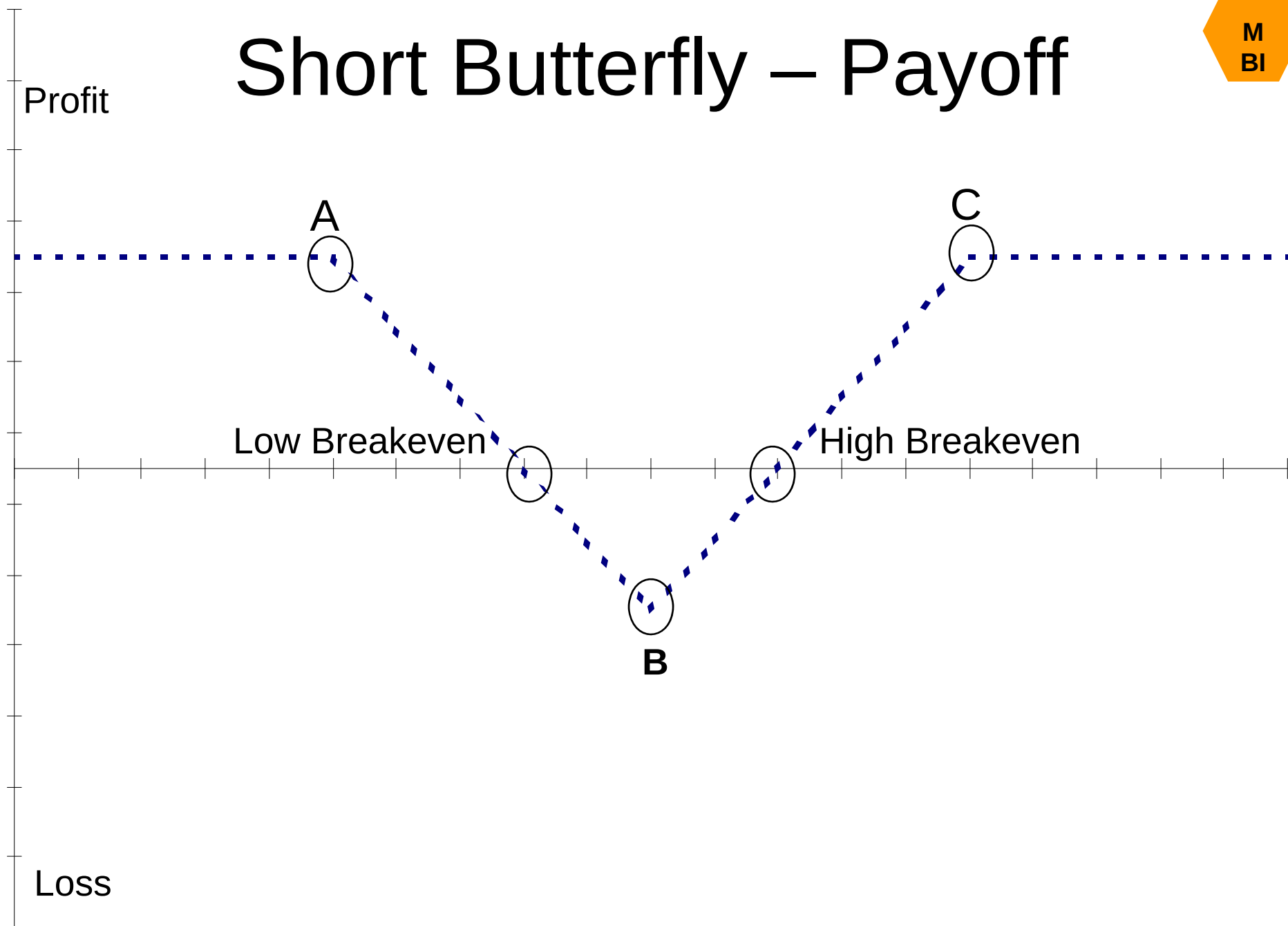
Formation

- Sell Call A, Buy 2 Calls B, Sell Call C

Variants

- Sell Put A, Buy 2 Puts B, Sell Put C
- Sell Put A, Buy Put & Call B, Sell Call C
- Sell Call A, Buy Put & Call B, Sell Put C

Short Butterfly – Payoff



Short Condor

View	Comment
Profit	Limited, Maximum when spot is $< A$ & $> D$
Loss	Limited, Maximum when spot is between B & C
Breakeven	Low BEP = $B - \text{Loss}$ High BEP = $C + \text{Loss}$
Time Decay	Neutral
Use	Large stock price movement expected. Often used as a follow up strategy
Volatility	Neutral
Margin	Yes

Short Condor

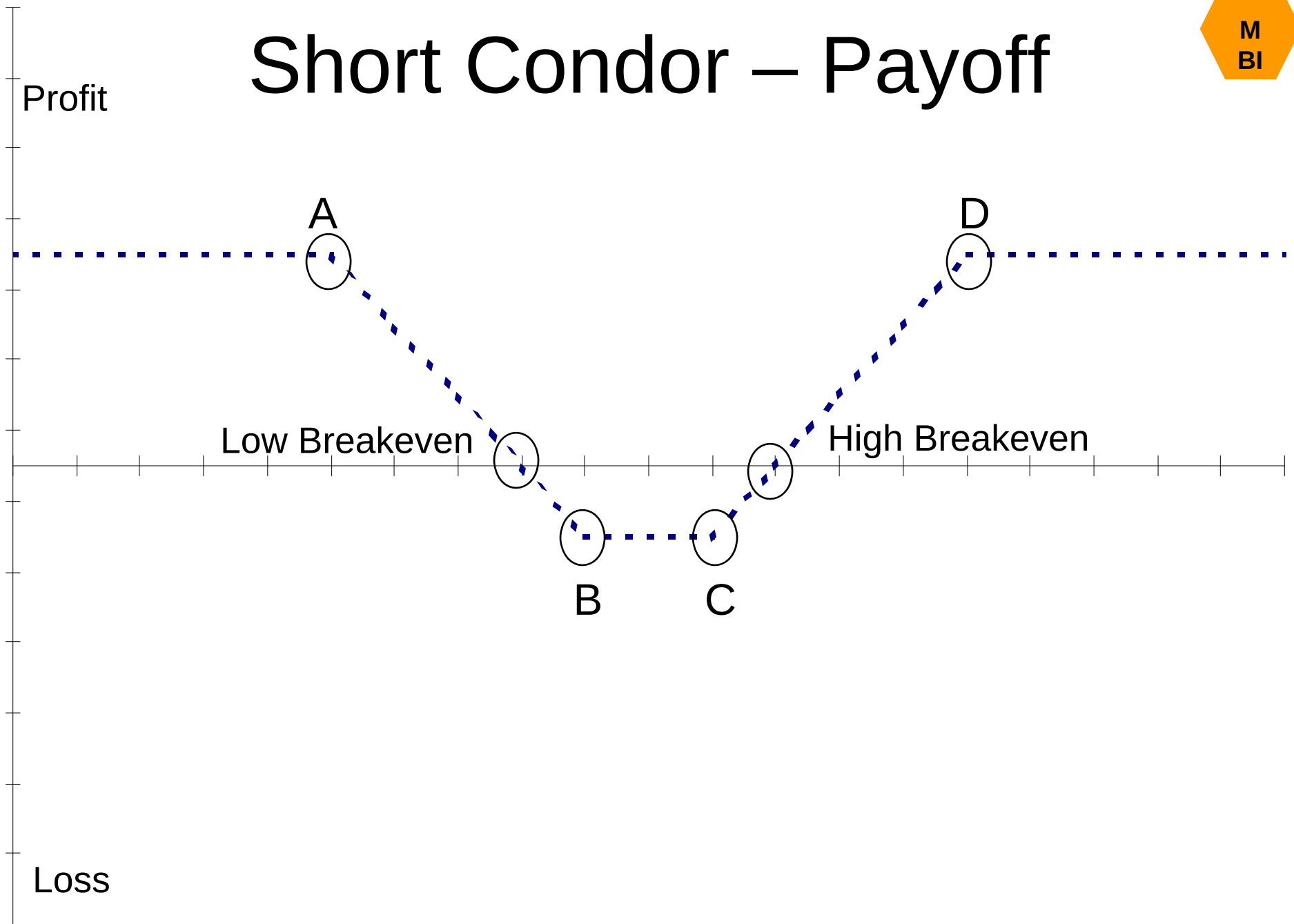
Formation

- Sell Call A, Buy Call B & C, Sell Call D

Variants

- Sell Put A, Buy Put B & C, Sell Put D
- Sell Put A, Buy Put B & Call C, Sell Call D
- Sell Call A, Buy Call B & Put C, Sell Put D

Short Condor – Payoff



Short Straddle

View	Comment
Profit	Limited to the net premium received
Loss	Unlimited
Breakeven	Low BEP = Strike price – net premium High BEP = Strike price + net premium
Time Decay	Helps
Use	Expecting a tight sideways movement
Volatility	Volatility decrease helps the position
Margin	Yes

Short Straddle

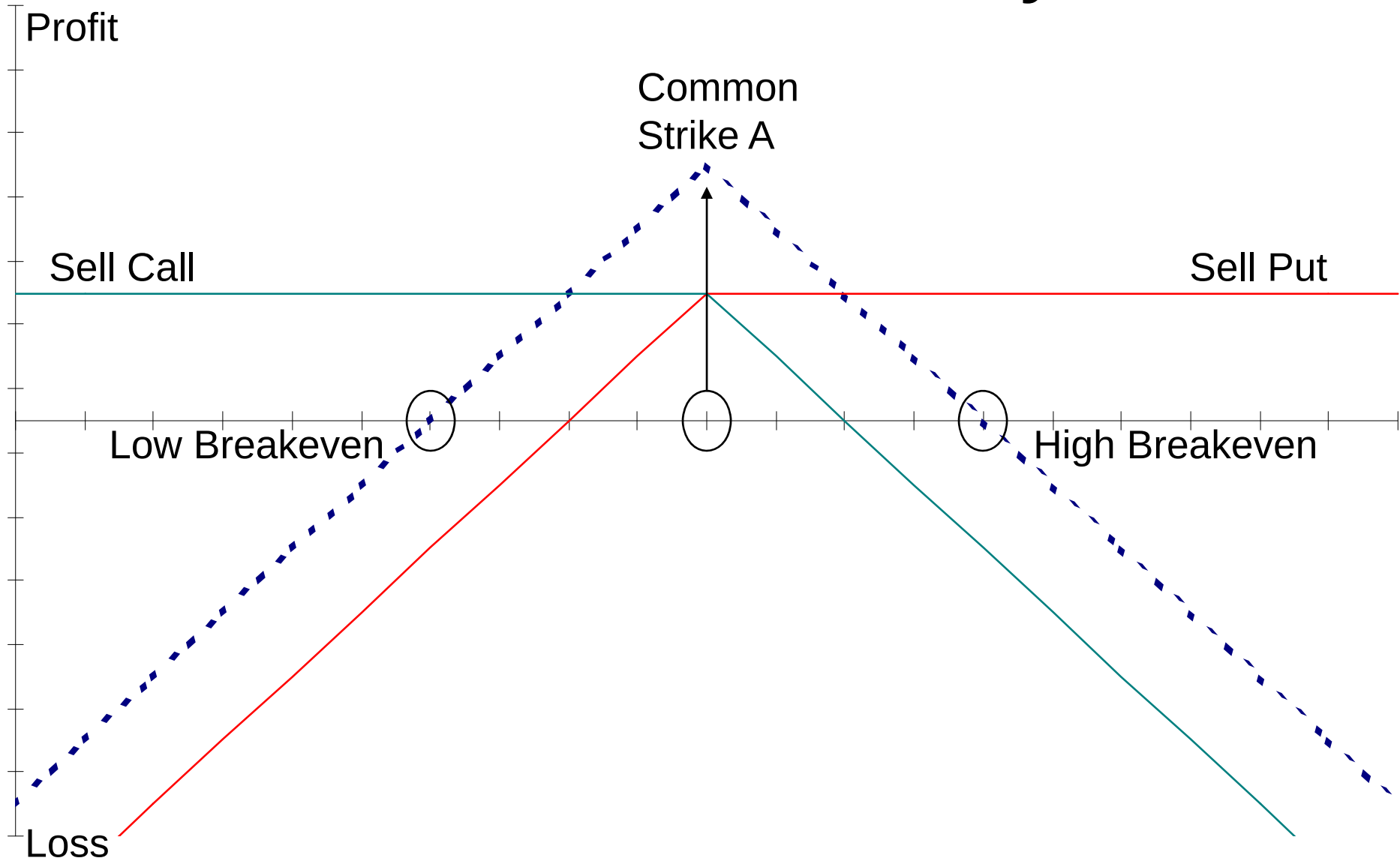
Formation

- Sell Call A and,
Sell Put A

Variant

- Sell 2 Calls A & Long Futures or
- Sell 2 Puts A & Short Futures

Short Straddle – Payoff



Short Strangle

View	Comment
Profit	Limited, Premium – (B – A), if Call Strike is A Limited to premium, if Call Strike is B
Loss	Unlimited
Breakeven	Low BEP = A – Profit High BEP = B + Profit
Time Decay	Helps
Use	Expecting a moderate sideways movement.
Volatility	Volatility decrease helps the position
Margin	Yes

Short Strangle

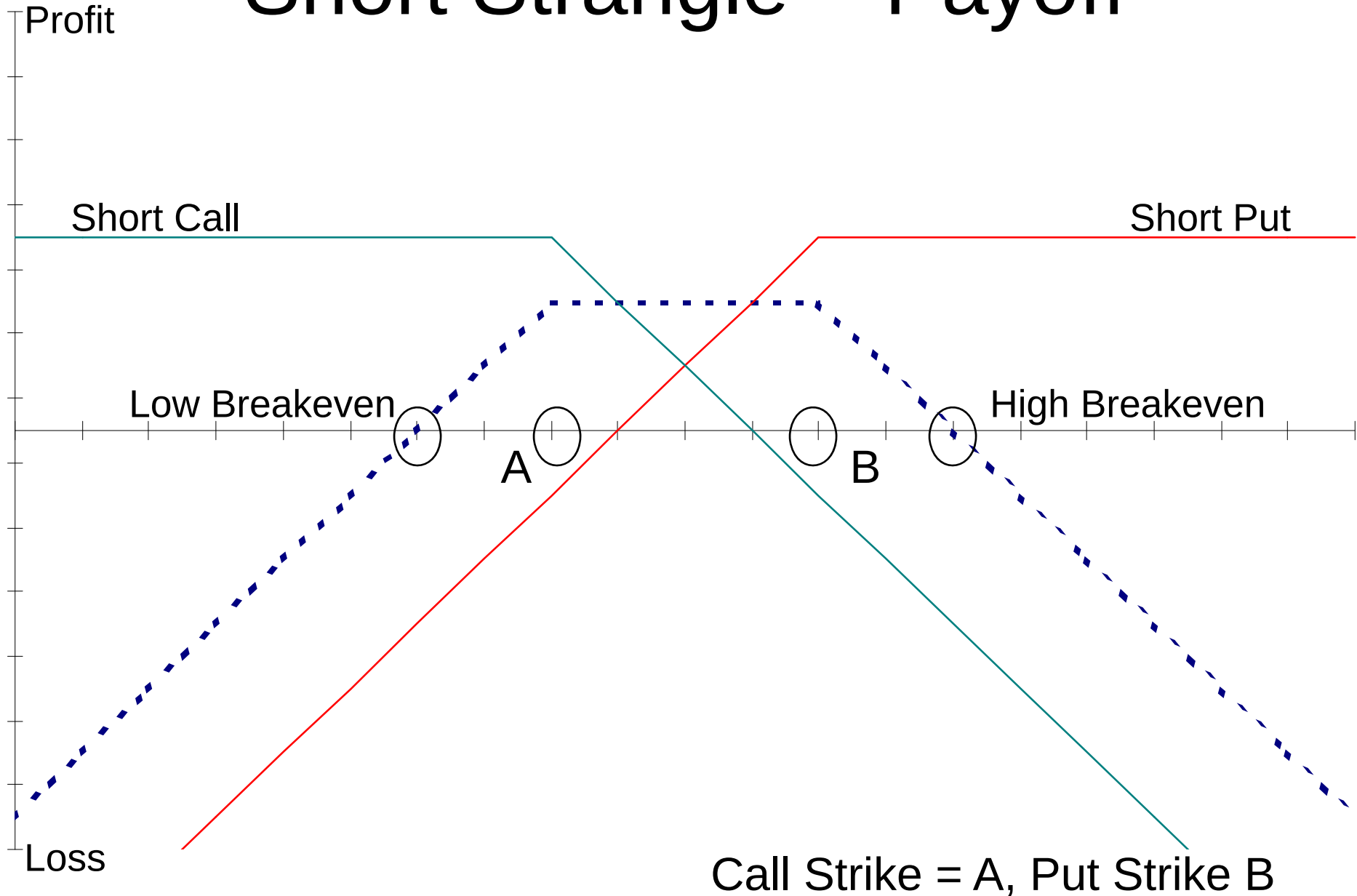
Formation

- Sell Call A and Sell Put B

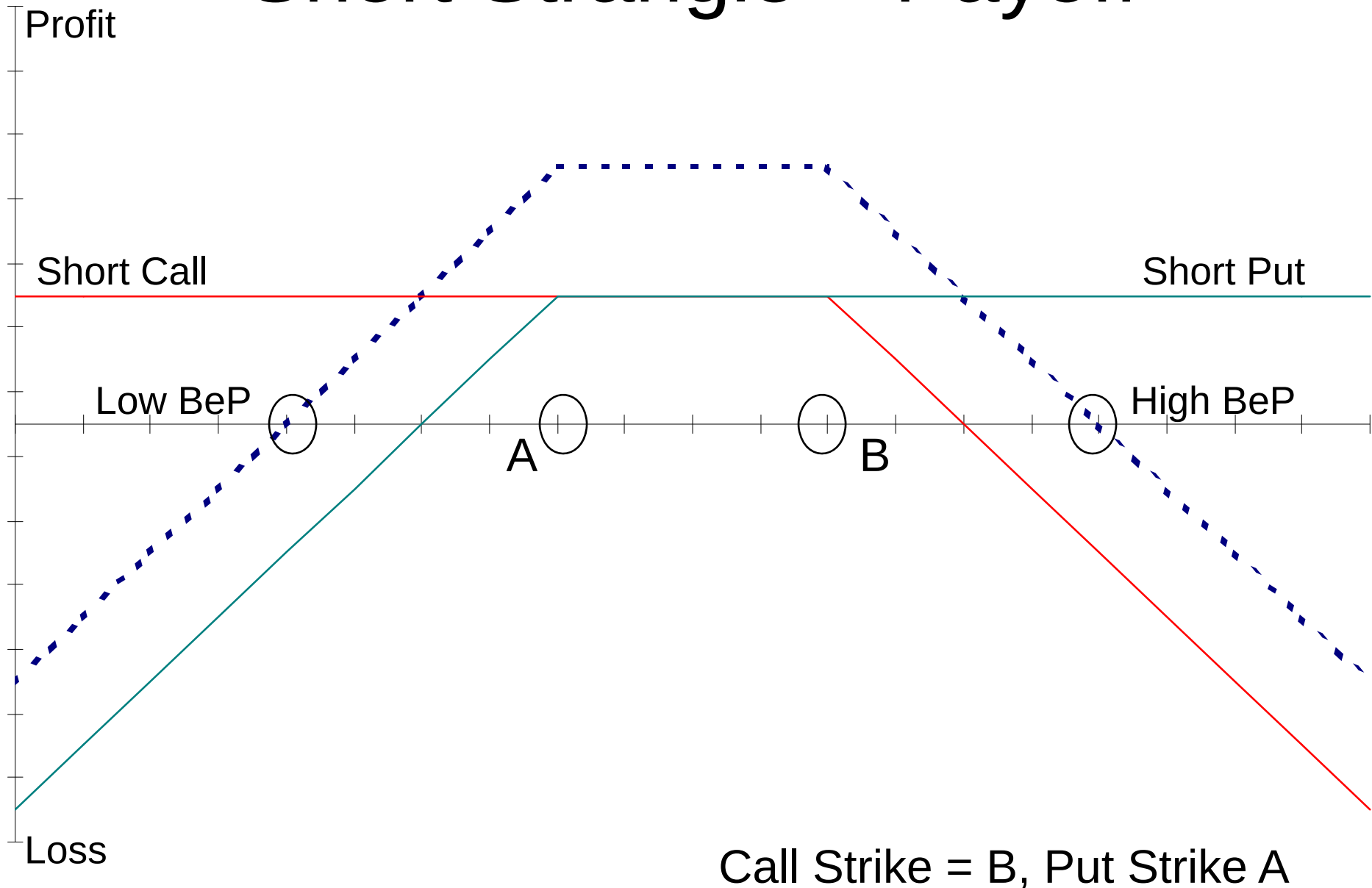
Variants

- Sell Put A and Sell Call B
- Sell Put A, Sell Put B and Short Futures
- Sell Call A, Sell Call B and Long Futures

Short Strangle – Payoff



Short Strangle – Payoff



Short Strap

View	Comment
Profit	Limited to the net premium received
Loss	Unlimited
Breakeven	Low BEP = Strike price – net premium High BEP = Strike price + (net premium / 2)
Time Decay	Helps
Use	Expecting a tight sideways movement. Decrease in the stock more likely.
Volatility	Volatility decrease helps the position
Margin	Yes

Short Strap

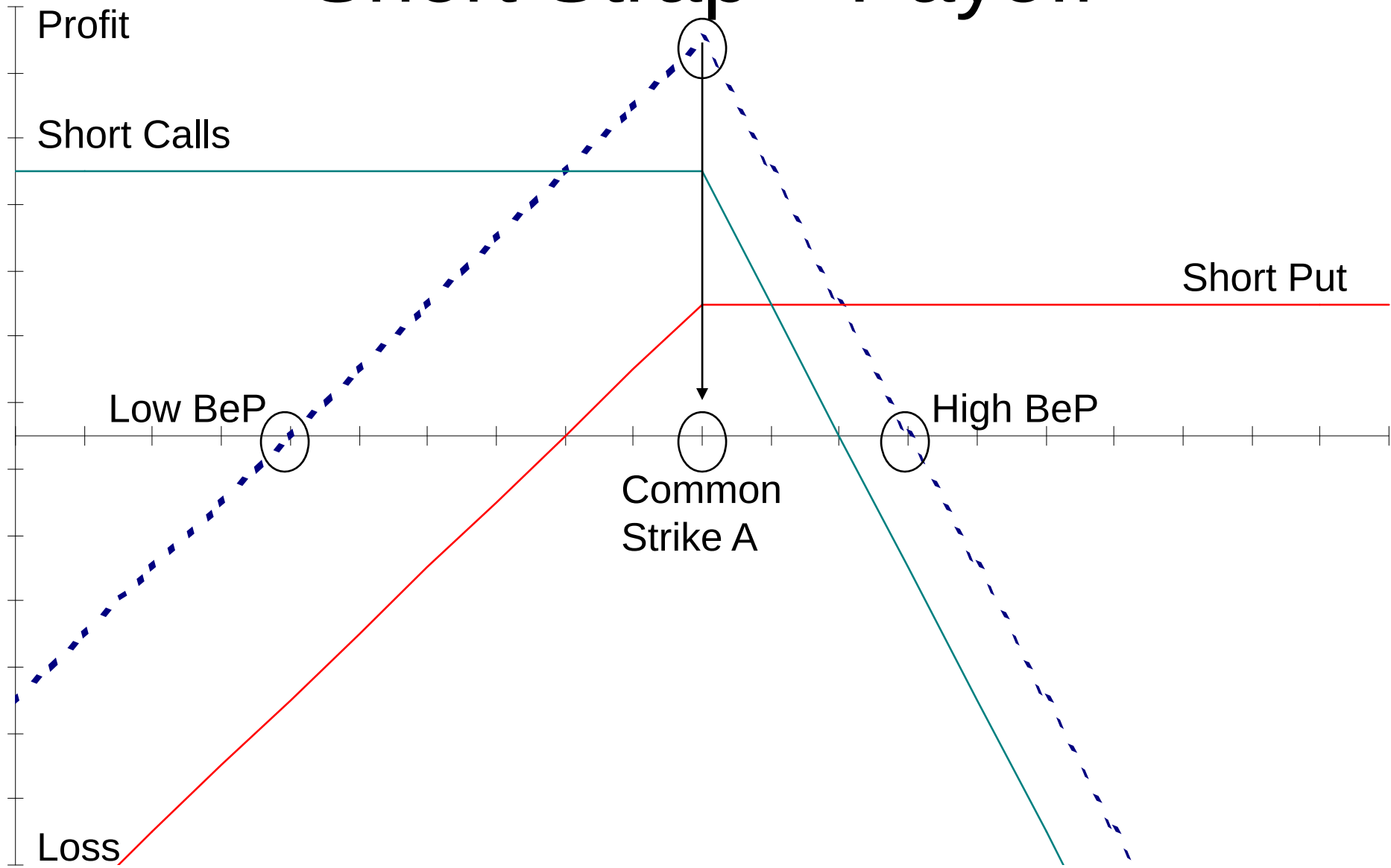
Formation

- Sell 2 Calls A and,
Sell Put A

Variant

- Sell 3 Calls A & Long Futures

Short Strap – Payoff



Short Strip

View	Comment
Profit	Limited to the net premium received
Loss	Unlimited
Breakeven	Low BEP = Strike price – (net premium / 2) High BEP = Strike price + net premium
Time Decay	Helps
Use	Expecting a tight sideways movement. Increase in the stock more likely.
Volatility	Volatility decrease helps the position
Margin	Yes

Short Strip

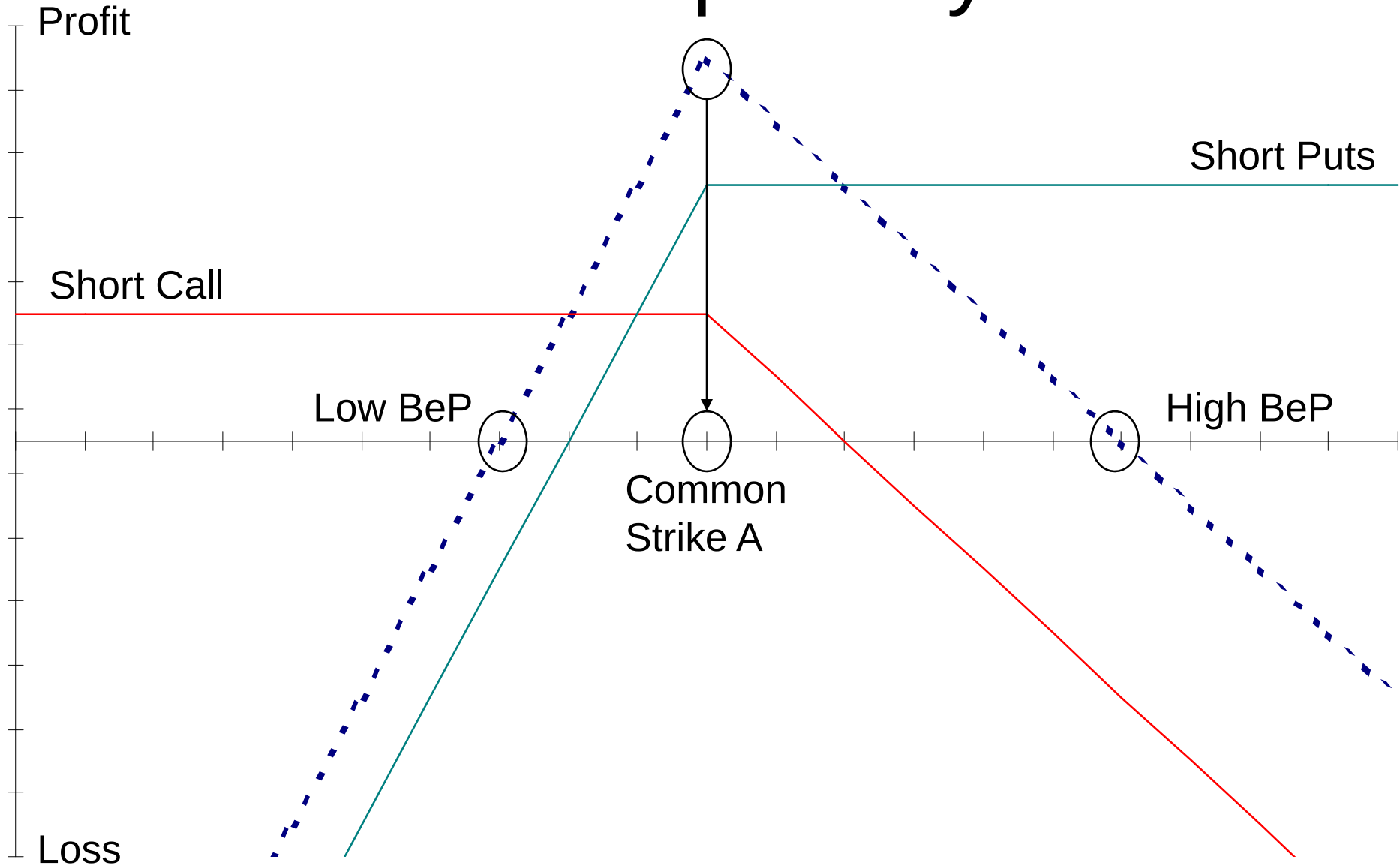
Formation

- Sell 2 Puts A and,
Sell Call A

Variant

- Sell 3 Puts A & Short Futures

Short Strip – Payoff



Call Ratio Spread

View	Comment
Profit	$(B - A) - (\text{debit premium})$ <u>or</u> $ + (\text{credit premium})$
Loss	Increases as the spot price increases
Breakeven	$B + \text{Profit}$
Time Decay	Helps
Use	Expecting a tight sideways movement. Biased towards a decrease in stock price.
Volatility	Volatility decrease helps the position
Margin	Yes

Call Ratio Spread

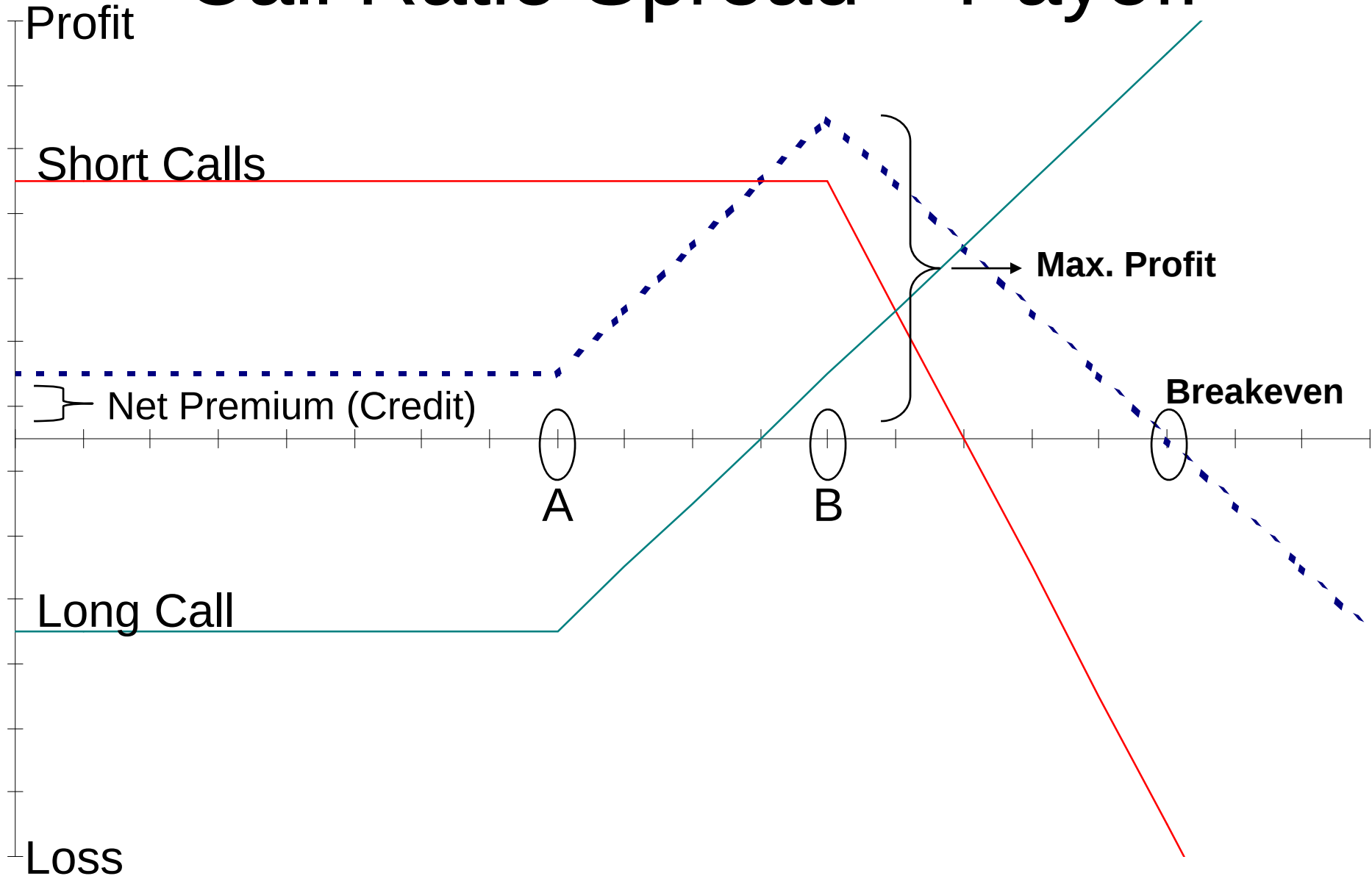
Formation

- Buy Call A & Sell 2 Calls B

Variant

- Buy Put A, Sell 2 Calls B & Long Futures

Call Ratio Spread – Payoff



Put Ratio Spread

View	Comment
Profit	$(B - A) - (\text{debit premium})$ <u>or</u> $ + (\text{credit premium})$
Loss	Increases as the spot price decreases
Breakeven	If credit premium = $[A - (B - A)] - \text{premium}$ If debit premium = $[A + (B - A)] - \text{premium}$
Time Decay	Helps
Use	Expecting a tight sideways movement. Biased towards an increase in stock price.
Volatility	Volatility decrease helps the position
Margin	Yes

Put Ratio Spread

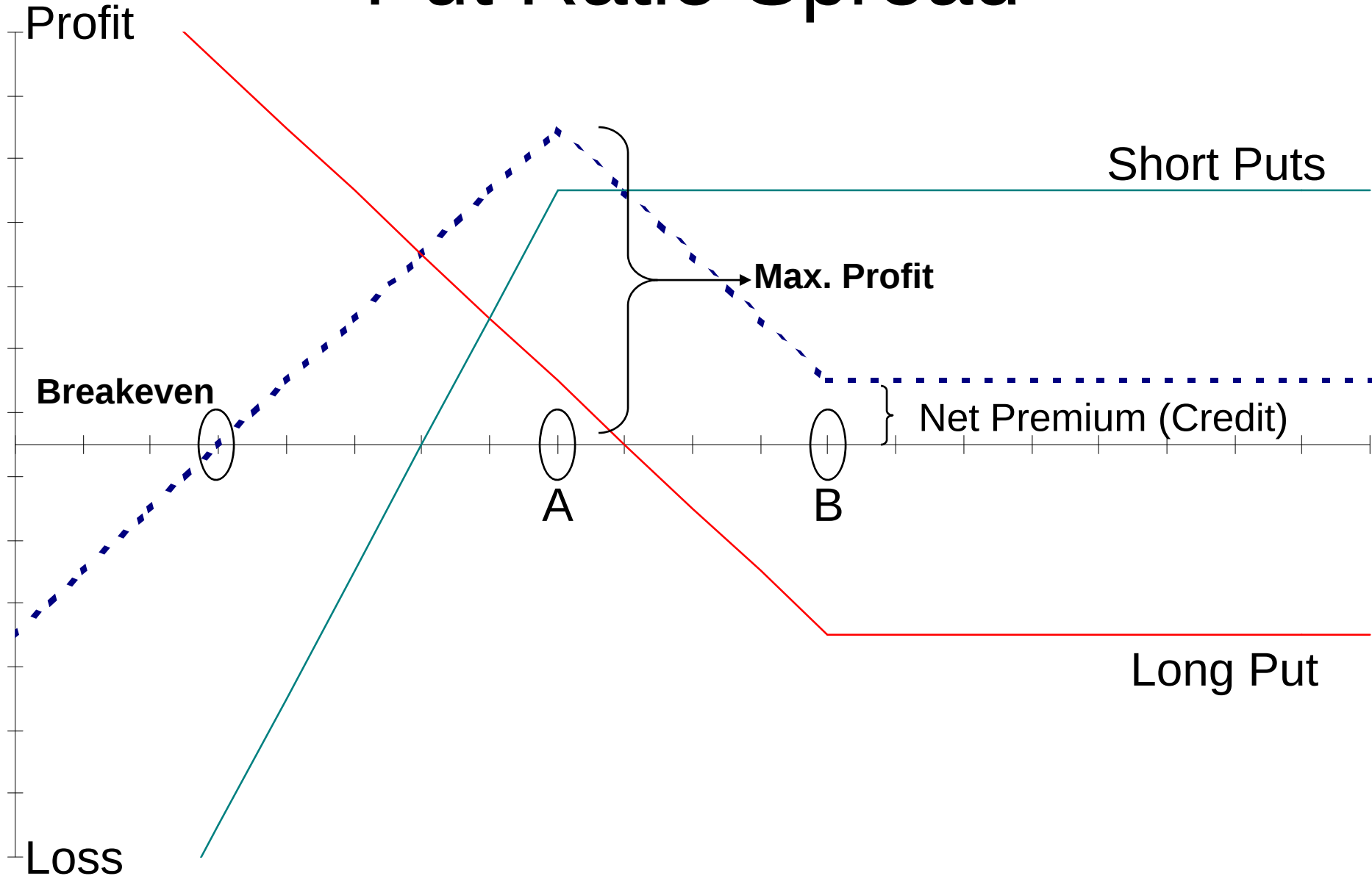
Formation

- Sell 2 Puts A & Buy Put B

Variant

- Sell 2 Puts A, Buy Call B & Short Futures

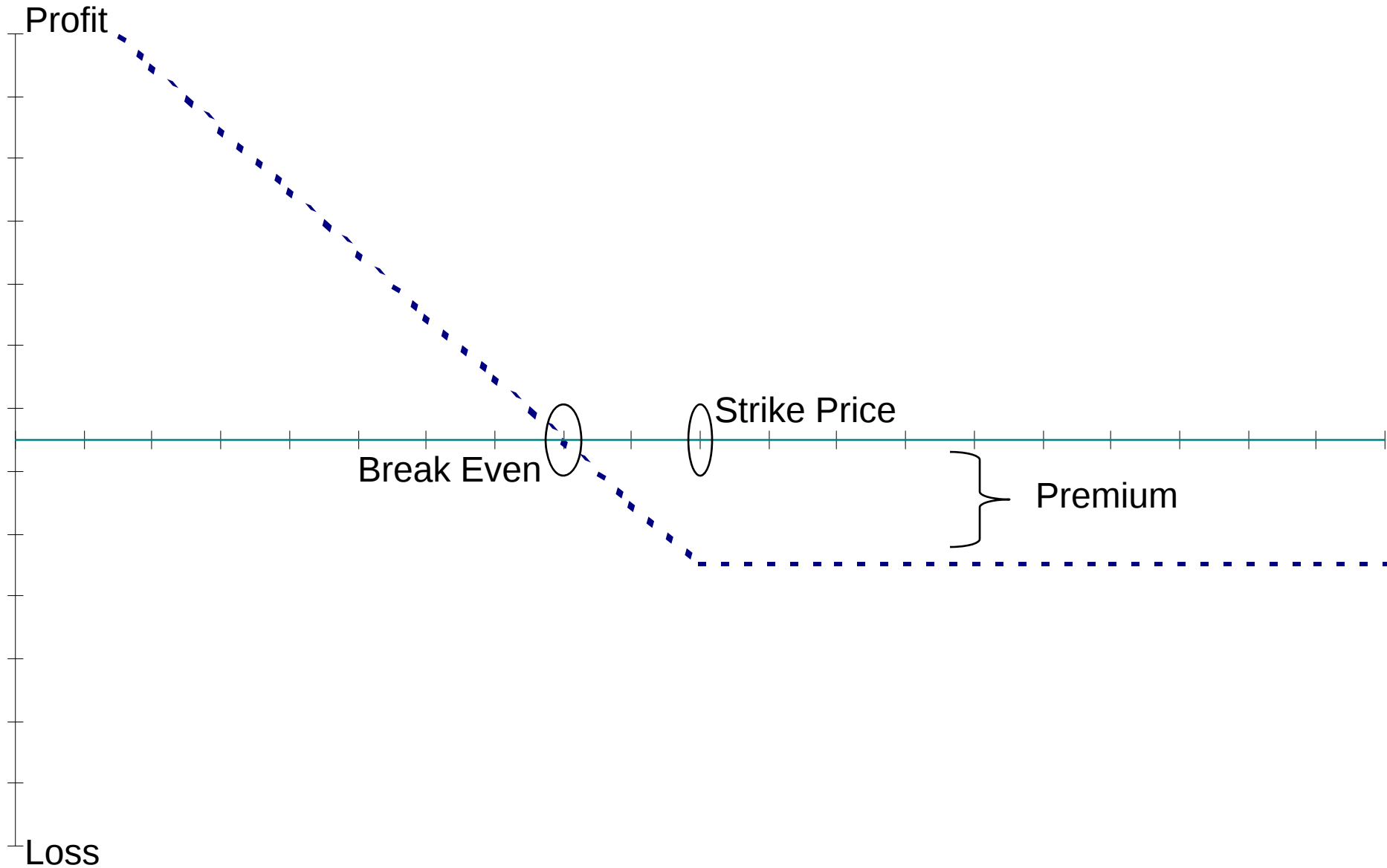
Put Ratio Spread



Long Put

View	Comment
Profit	Unlimited, Increases as the spot price decreases
Loss	Limited to the premium paid
Breakeven	Strike price - premium
Time Decay	Hurts
Use	Very bearish outlook
Volatility	Volatility increase helps the position
Margin	No

Long Put – Payoff



Long Put - Variant

Protective Call

- Sell Underlying or Sell Futures, and Buy Call

(Upside Risk is hedged)

Max. Loss:

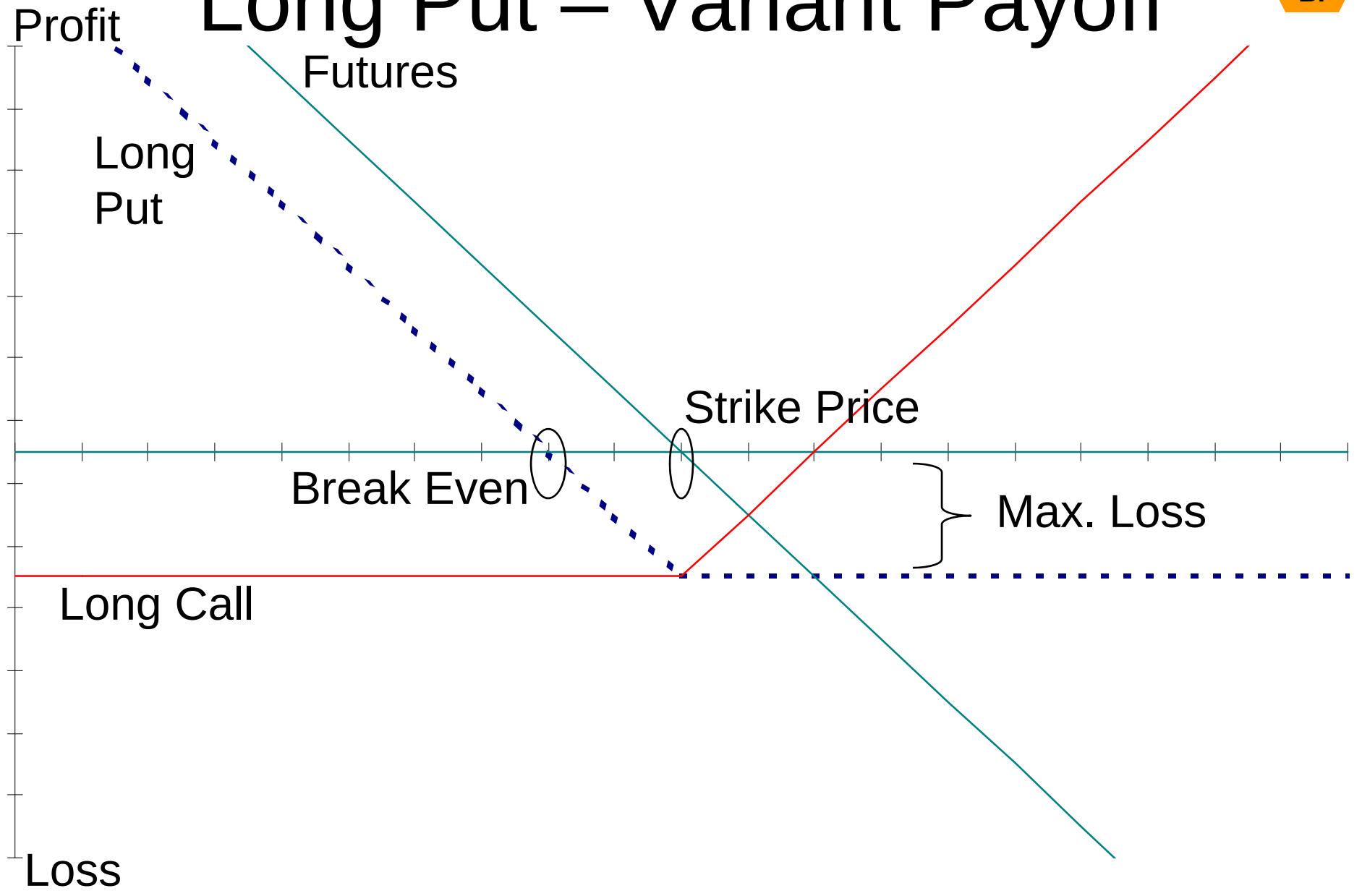
If Futures < Strike = (Strike – Futures) + Premium

If Futures > Strike = Premium – (Futures - Strike)

Breakeven = Call Strike - Max. Loss

Margin required for position in Futures

Long Put – Variant Payoff



Put Ratio Backspread

View	Comment
Profit	Increases as the spot price decreases
Loss	$(B - A) + (\text{debit premium})$ <u>or</u> $-(\text{credit premium})$
Breakeven	$A - \text{Loss}$
Time Decay	Hurts
Use	Market is near A and outlook is bearish
Volatility	Volatility increase helps the position
Margin	Yes

Put Ratio Backspread

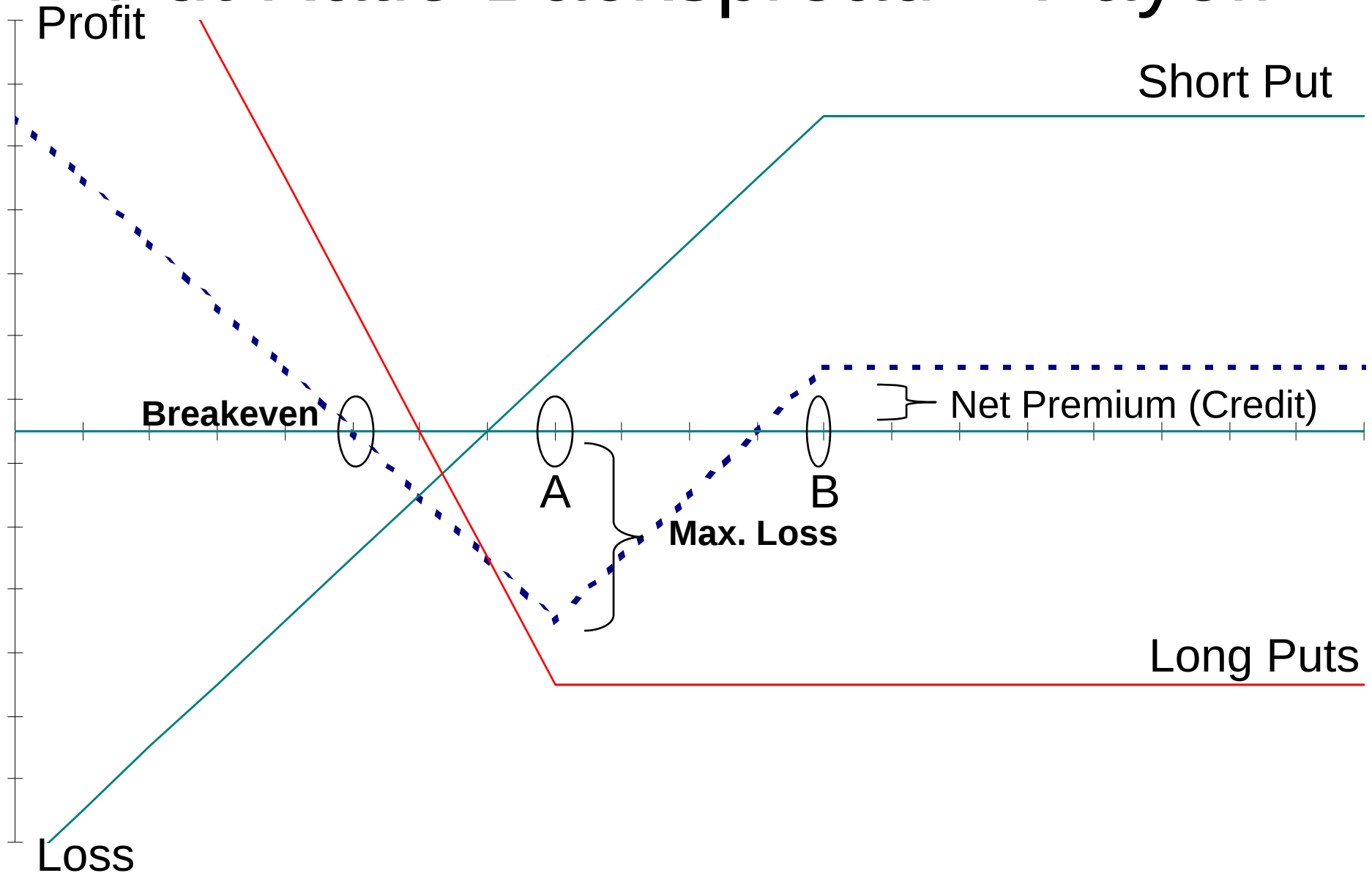
Formation

- Buy 2 lower strike (A) puts &
Sell a higher strike (B) put.

Variant

- Buy 2 lower strike (A) puts,
Sell a higher strike (B) call &
Long Futures

Put Ratio Backspread – Payoff



Short Futures

View	Comment
Profit	Increases as the spot price decreases
Loss	Increases as the spot price increases
Breakeven	Sell price + Brokerage
Time Decay	No impact
Use	Very bearish outlook
Volatility	No impact
Margin	Yes

Short Futures



Short Futures – Variant



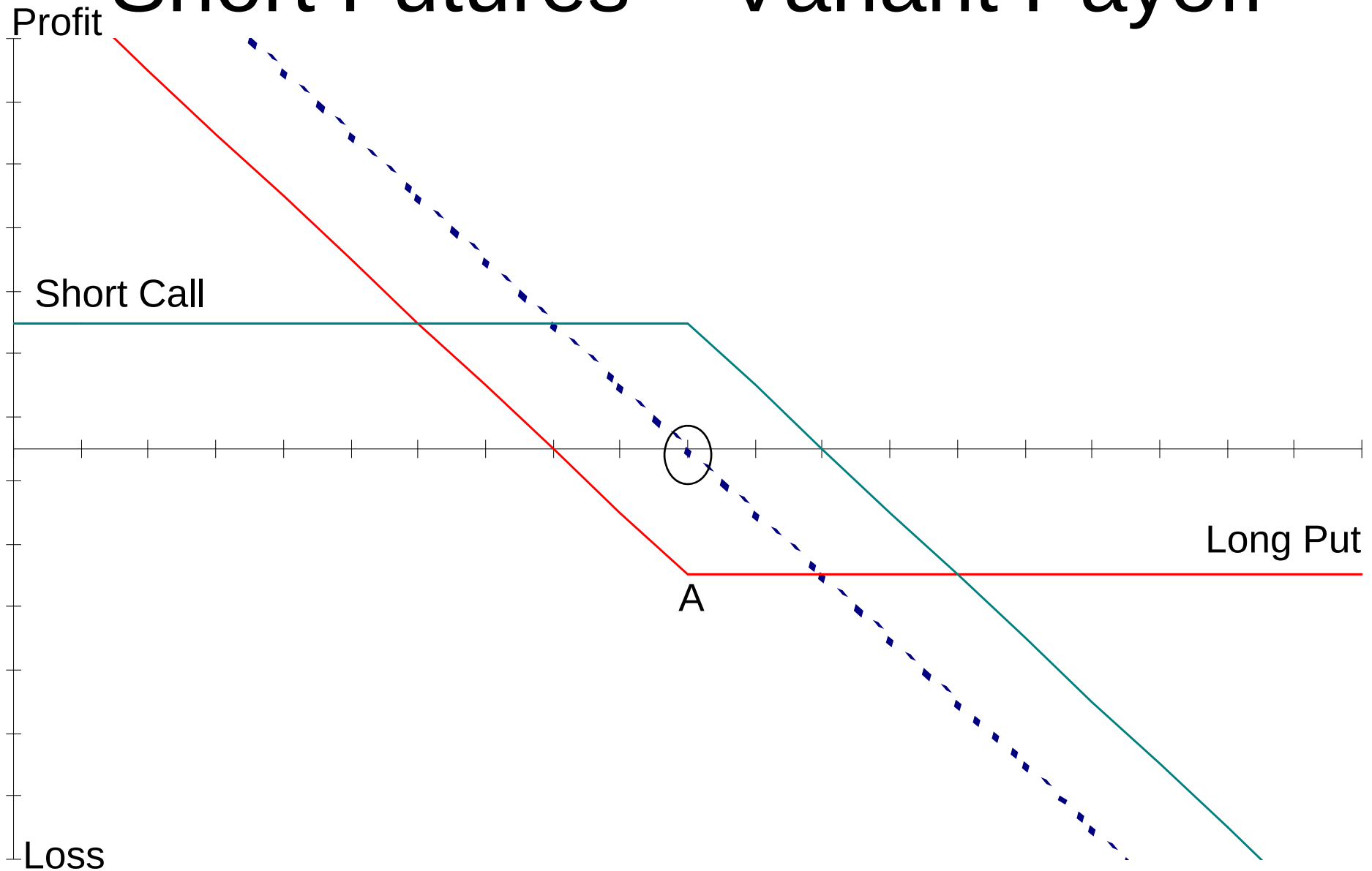
Formation

- Buy Put A & Sell Call A

Going Short at

$A + \text{Call Premium} - \text{Put Premium}$

Short Futures – Variant Payoff



Short Semi Futures

View	Comment
Profit	Increases as the spot price decreases
Loss	Increases as the spot price increases
Breakeven	Call Strike (B) + Premium credit <u>or</u> Put Strike (A) - Premium debit
Time Decay	Mixed – Hurts for Long put and helps for Short call
Use	Bearish outlook
Volatility	Neutral
Margin	Yes

Short Semi Futures

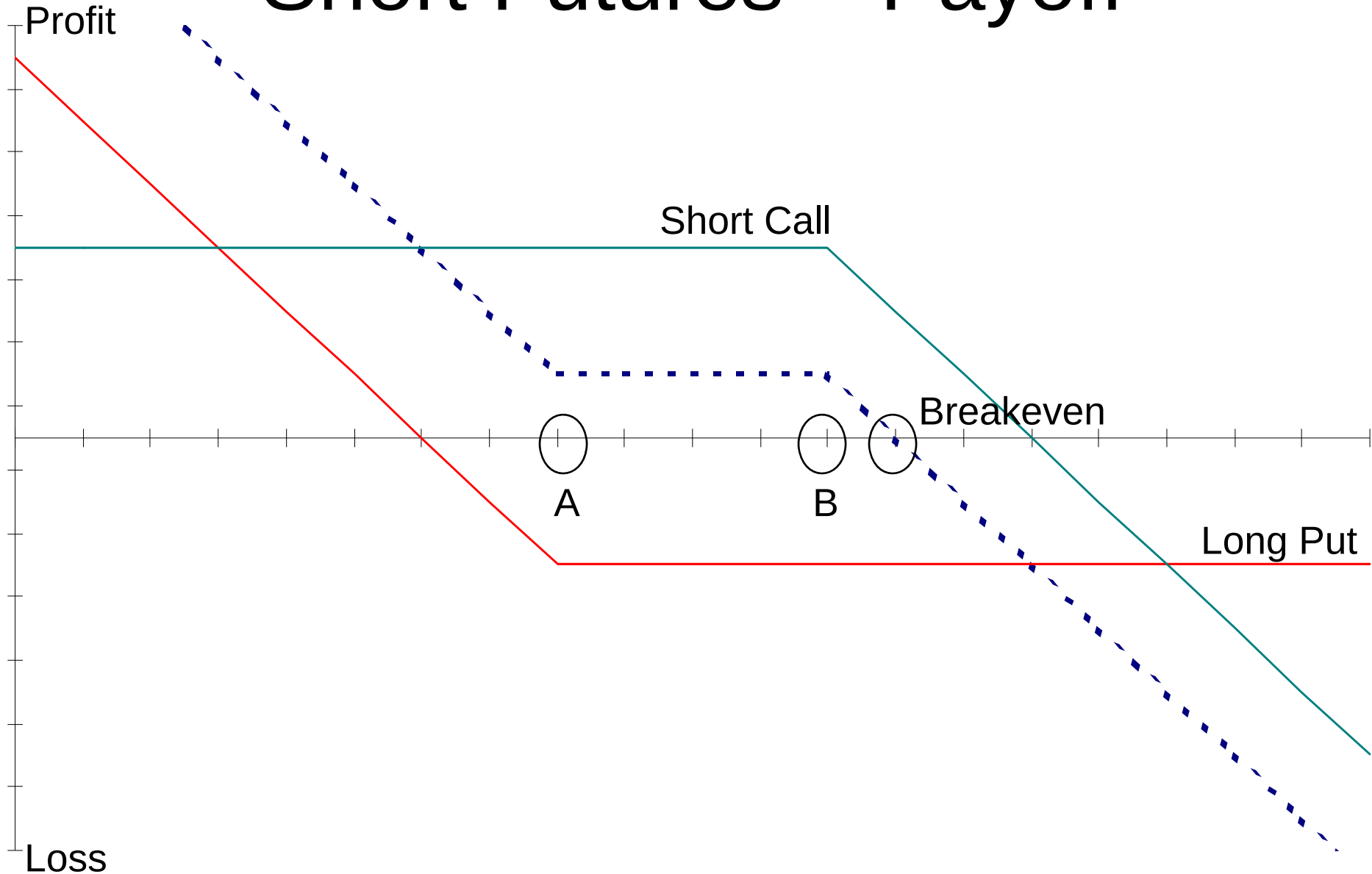
Formation

- Buy Put A &
Sell Call B

Variant

- Buy Put A,
Sell Put B &
Short Futures

Short Futures – Payoff



Bear Put Spread

View	Comment
Profit	Limited, Max. Profit = $(B - A) - \text{Net Premium}$
Loss	Limited, Max. Loss = Net Premium
Breakeven	Strike B - Max. Loss
Time Decay	Mixed – Hurts for long put and helps for short put
Use	Bearish outlook
Volatility	Neutral
Margin	Yes

Bear Put Spread

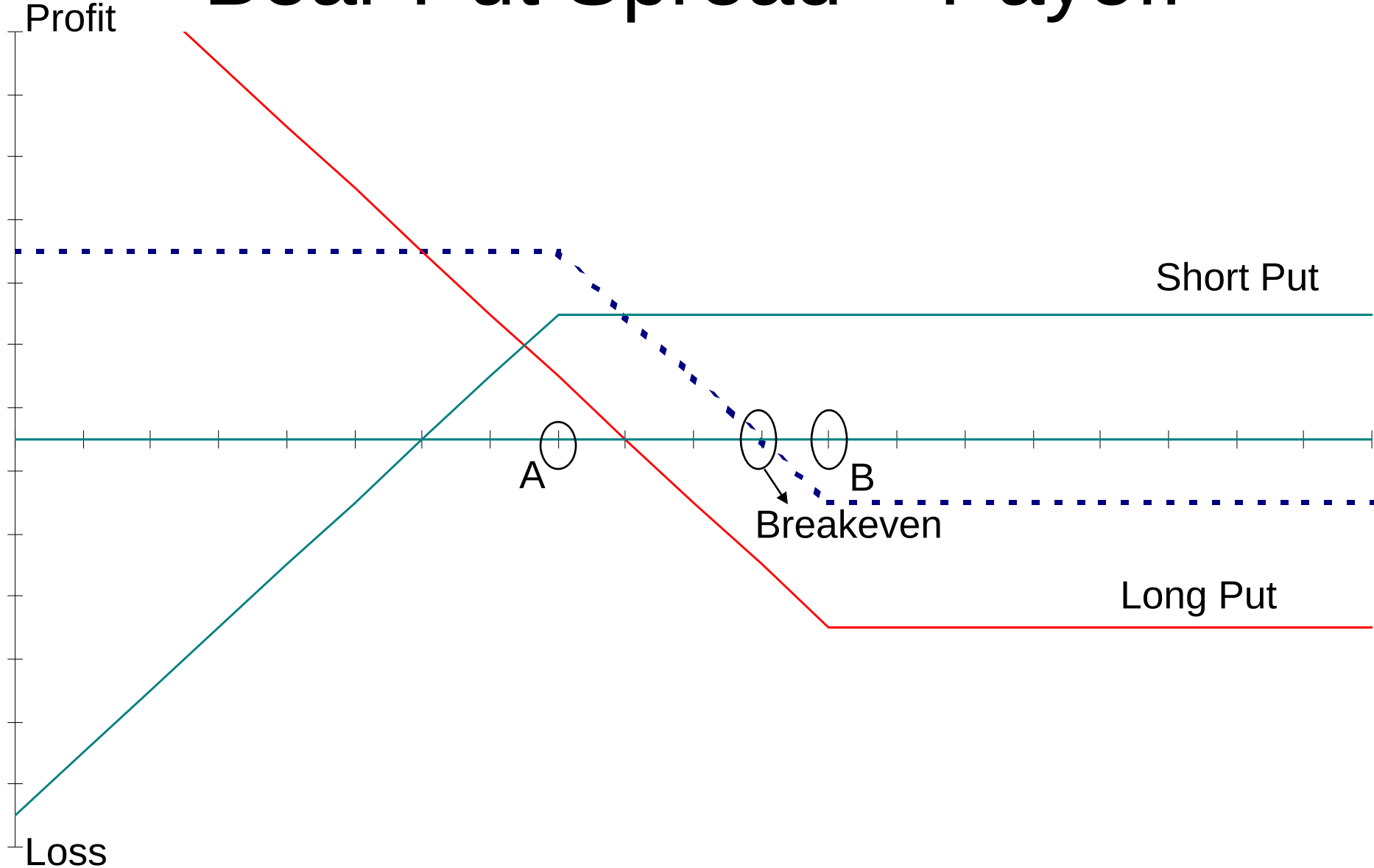
Formation

- Buy Put B and Sell Put A

Variant

- Buy Call B, Short Futures & Sell Put A

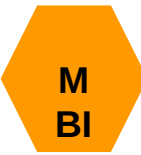
Bear Put Spread – Payoff



Bear Call Spread

View	Comment
Profit	Limited, Max. Profit = Net Premium
Loss	Limited, Max. Loss = $(B - A) - \text{Net Premium}$
Breakeven	Strike B - Max. Loss
Time Decay	Mixed – Hurts for long call and helps for short call
Use	Bearish outlook
Volatility	Neutral
Margin	Yes

Bear Call Spread



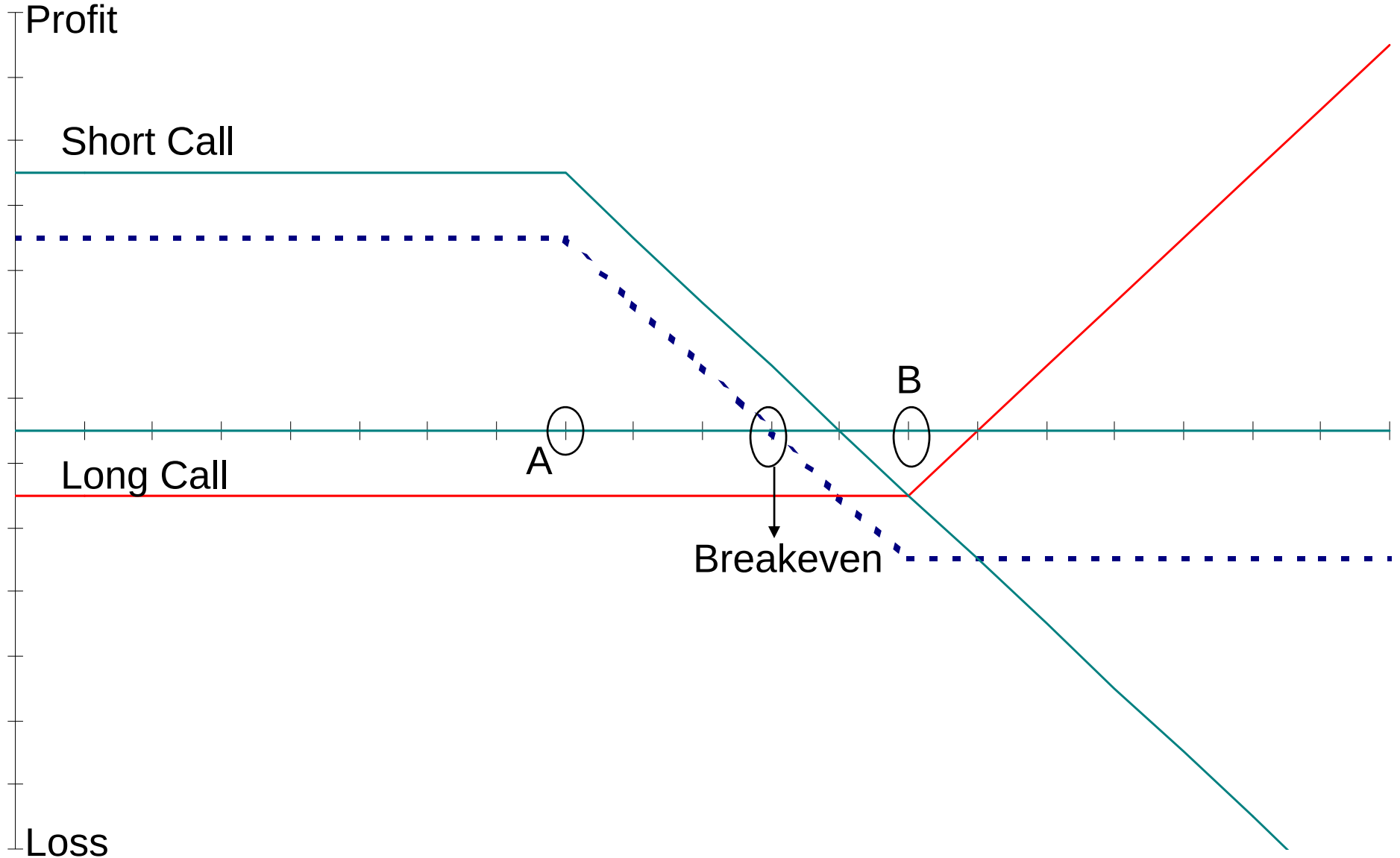
Formation

- Buy Call B & Sell Call A

Variant

- Buy Call B, Sell Put A & Short Futures

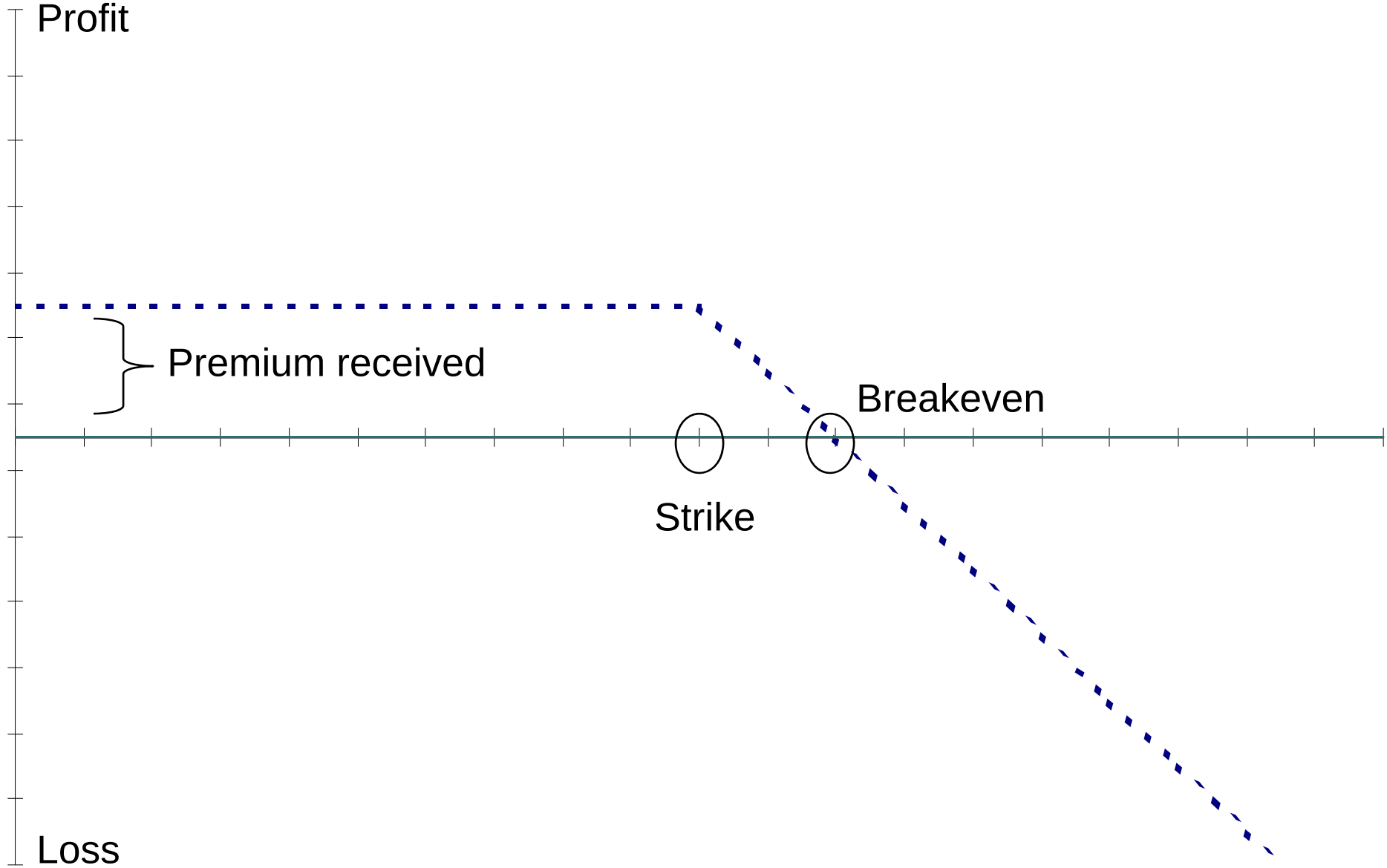
Bear Call Spread – Payoff



Short Call

View	Comment
Profit	Limited to the premium received
Loss	Unlimited, increases as the spot price increases
Breakeven	Strike price + Premium
Time Decay	Helps
Use	Bearish outlook
Volatility	Volatility decrease helps the position
Margin	Yes

Short Call – Payoff



Short Call – Variant

Covered Put

- Short Futures, and Sell Put A

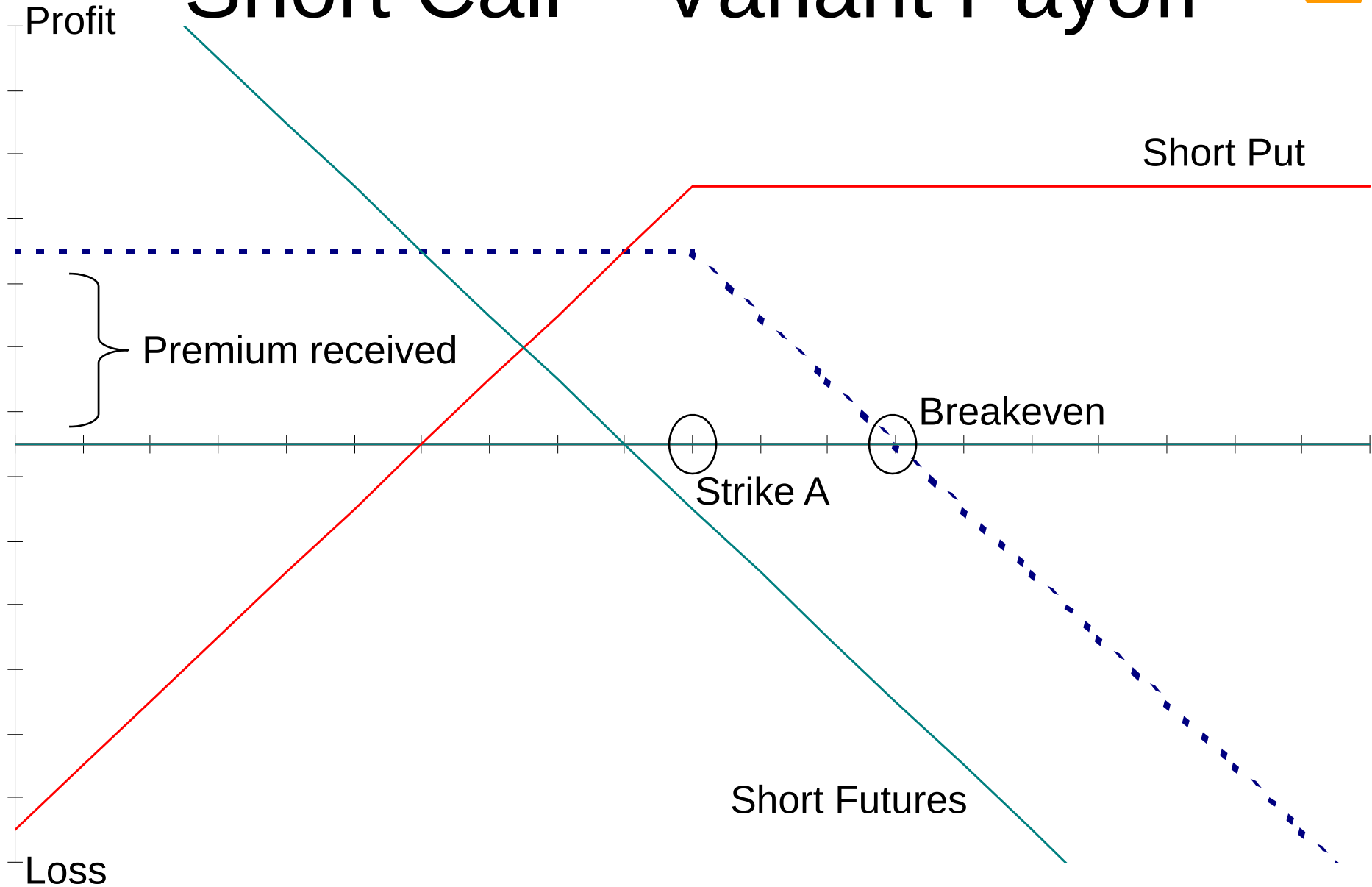
Max. Profit:

If Futures < Strike = Premium - (Strike – Futures)

If Futures > Strike = Premium + (Futures – Strike)

Breakeven = Put Strike + Max. Profit

Short Call – Variant Payoff



Thank You