# 3. Option Strategies

# Covered writing

- you have long asset already.
- (option overwriting).
- called Naked writing if you don't have ~~the~~ asset.

Floors

Caps (short asset)

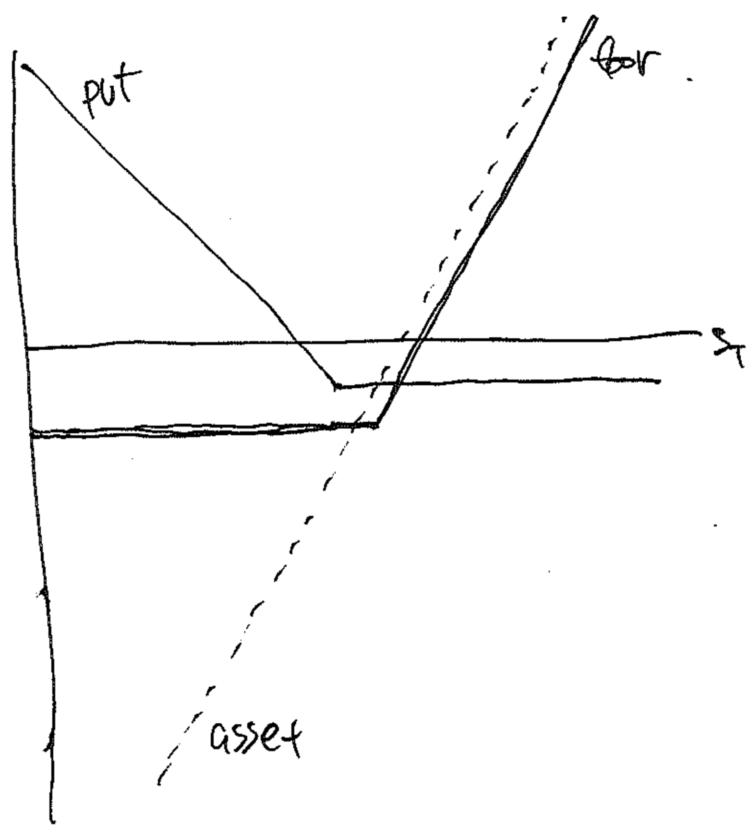
Covered Call

Covered put (short asset)

## Floors (protective put)

long asset + long put = long call

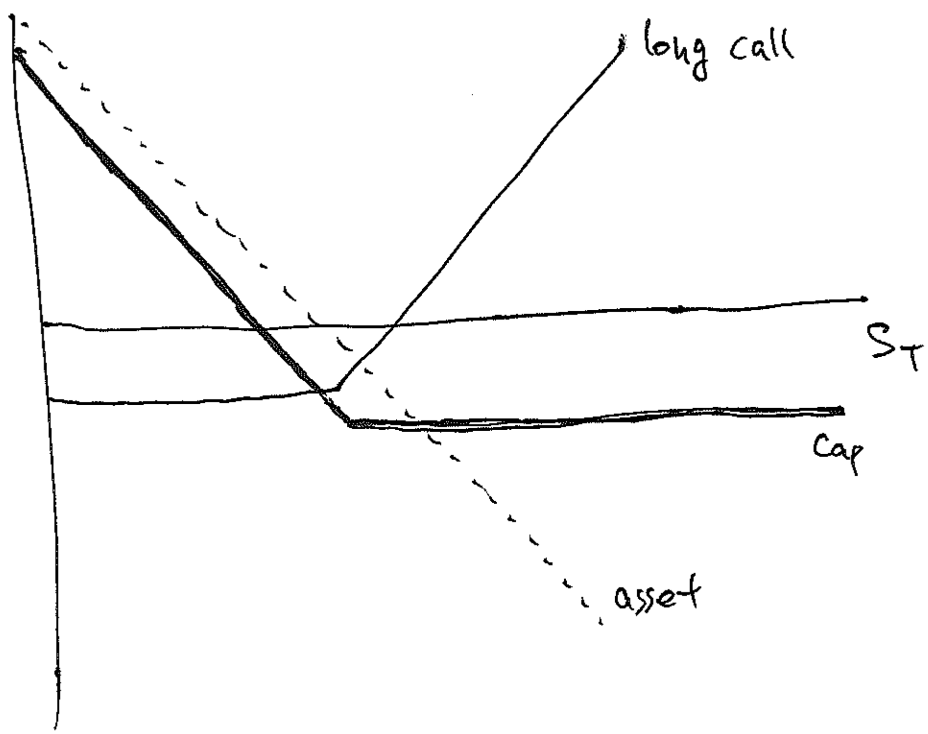
→ Gurantees sales price of asset



# Caps

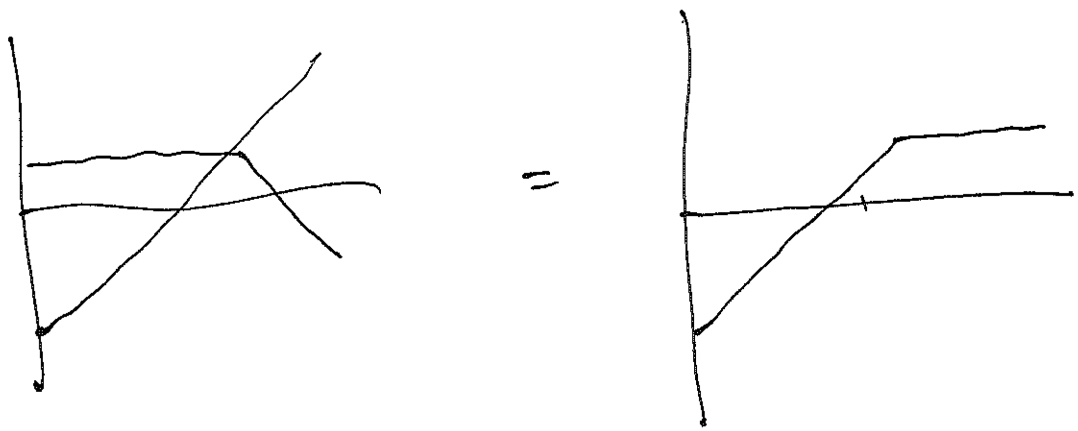
Short asset + long call = long put.

→ Gurantees purchase price of buying back the asset.



# Covered Call

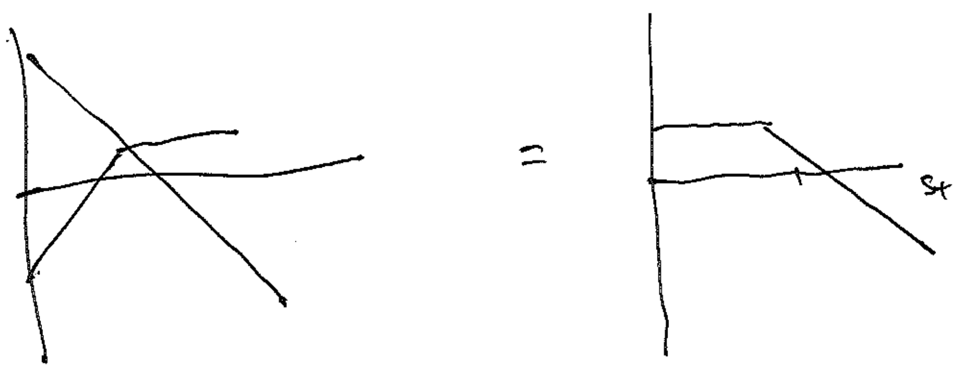
long asset + short call = short put.



- used when ~~[illegible]~~ price ~~are~~ may stay the same or go up.

# Covered Put

short asset + long put




- used when price may stay or go down.

Naked Writing

→ No asset is hand.

Spreads –
- Bull spread
- Box spread
- Ratio spread

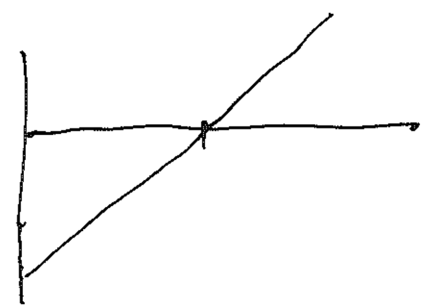
Collars –

# Spreads

You think a stock price will rise. (Current spot price $1000).

→ Long pos. in future at $1000.

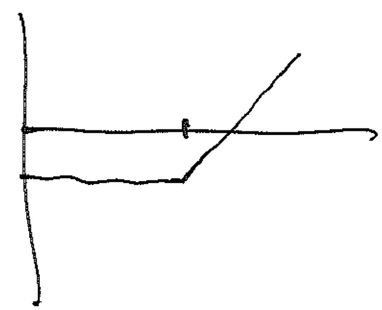
Risky.



→ Long Call at $1000.

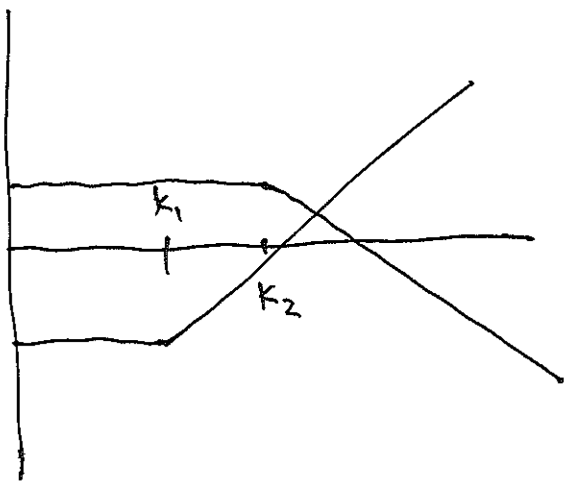
Less Risky.

Must pay premium.



Is there anything that is low risk, but less cost?

**Bull Spread** = long call $K_1$ + short call $K_2$ (vertical spread)

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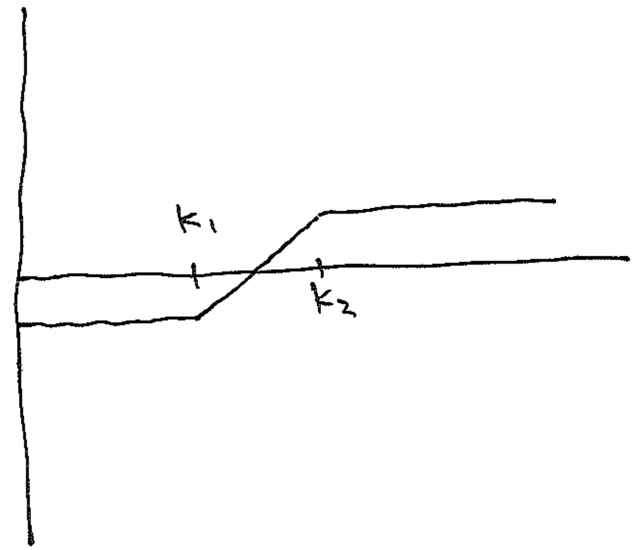
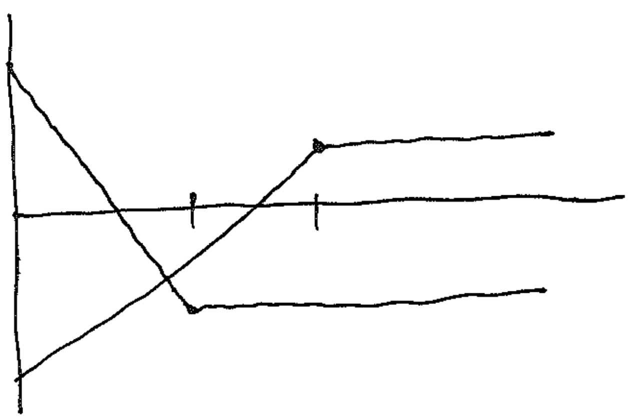
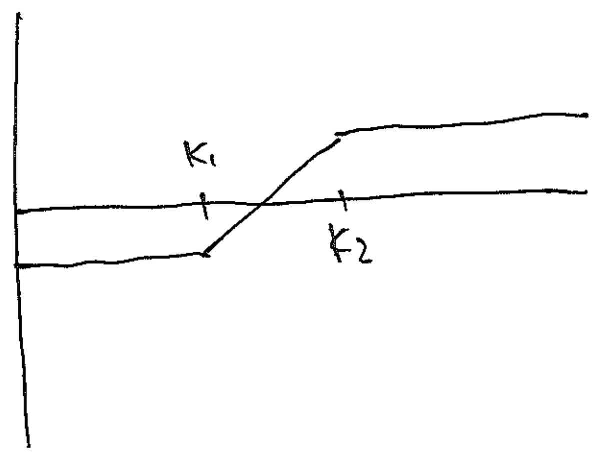



= long put $K_1$ + short put $K_2$



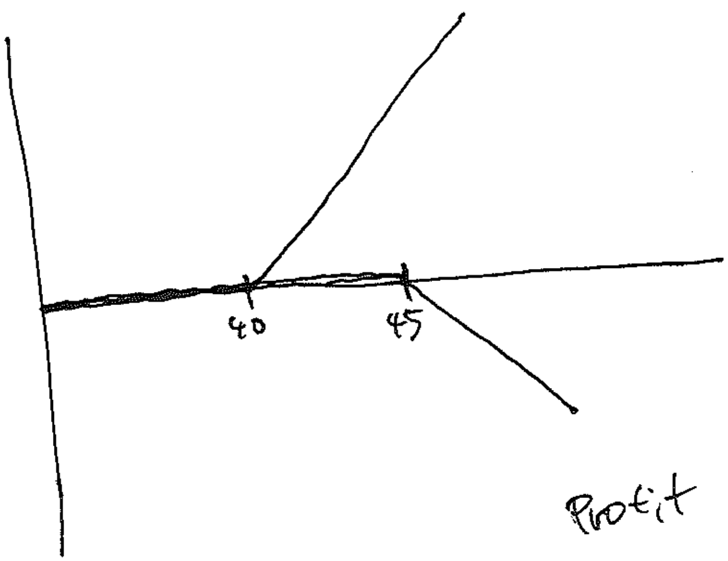


# Example 3.2

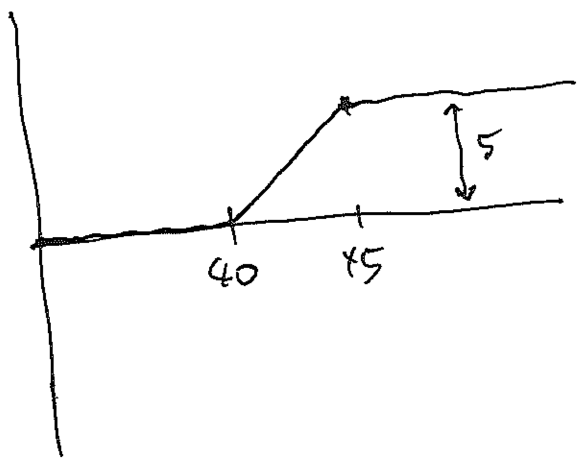
40-strike Call Long 3mo. prem $2.78 $1.81

45-strike Call Short 3mo. " $.97

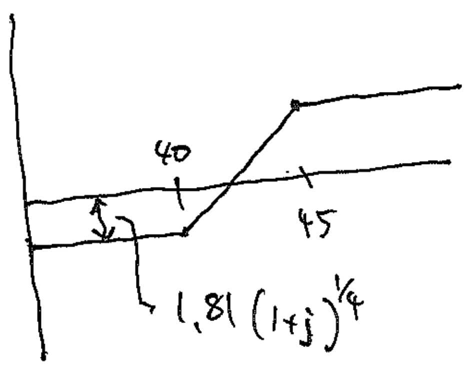
Payoff




Payoff Combined




Profit



# Box Spreads

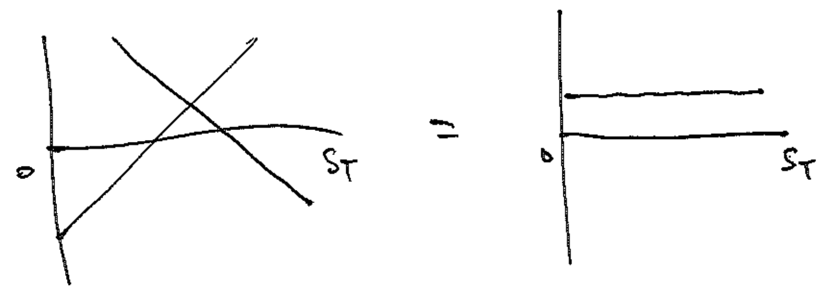
= Synthetic long forward + Synthetic short forward.

→ Guaranteed cash flow in future,

→ is not affected by stock price.

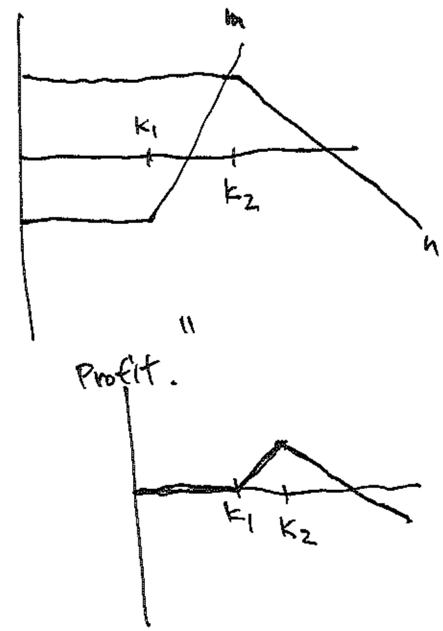
→ Like Lending / borrowing money

→ like buying a bond.



# Ratio Spreads

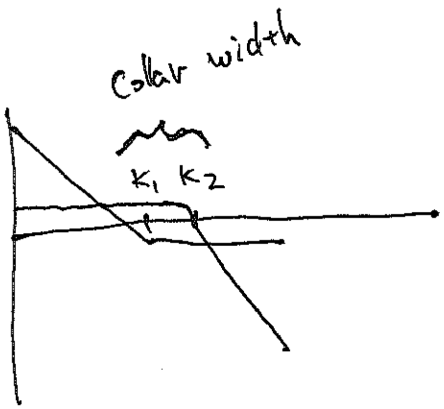
Long $m$ calls at $K_1$- strike
Short $n$ calls at $K_2$- strike
} same maturity date
same asset.




- → Can be constructed by puts
- → Can make premium = 0.
- → related to paylater strategy.
  - Insurance that cost you 0 if not needed.
    but cost more if you need it.

# Collars

Long put + short call
$K_1$ $\qquad$ $K_2$

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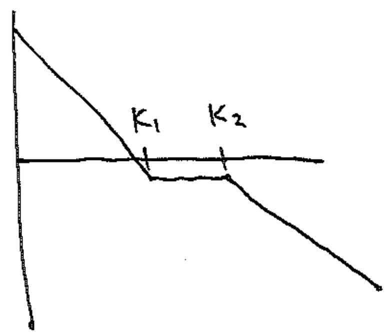
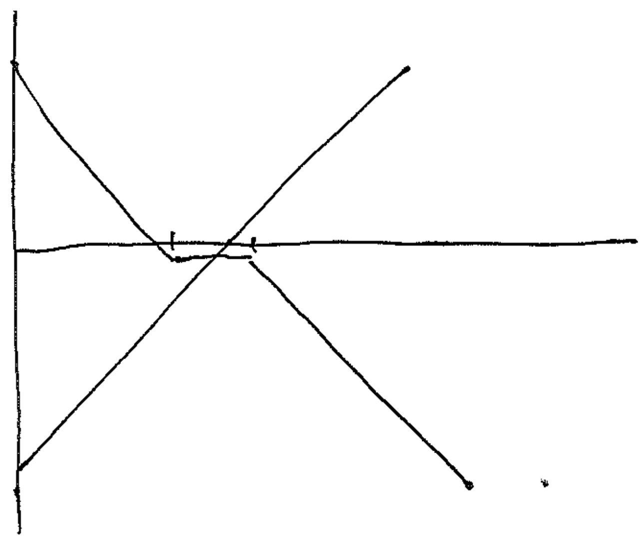


## Collard Stock (covered writing)

= Long asset + collar.



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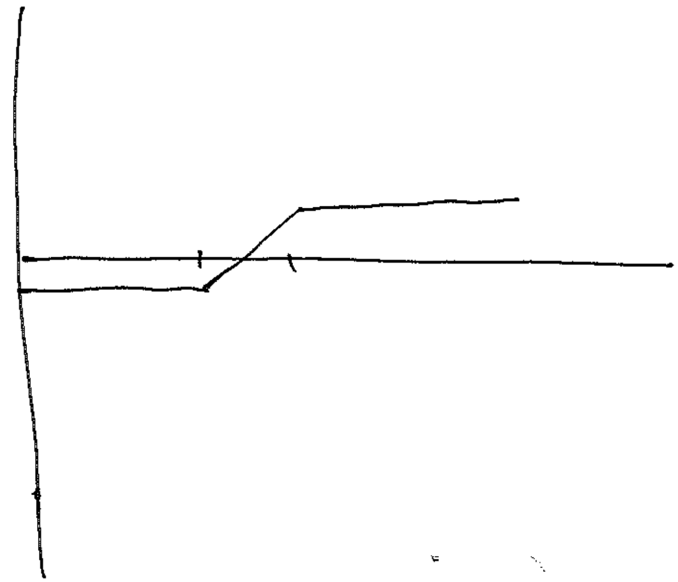


→ like a bull spread.

# Zero-cost Collars

Collar = long put + short Call

$K_1$ ~~[illegible]~~ $\qquad K_2$

Adjust $K_1$ so that premium for put and call will cancel out.

# Non - Directional Strategies

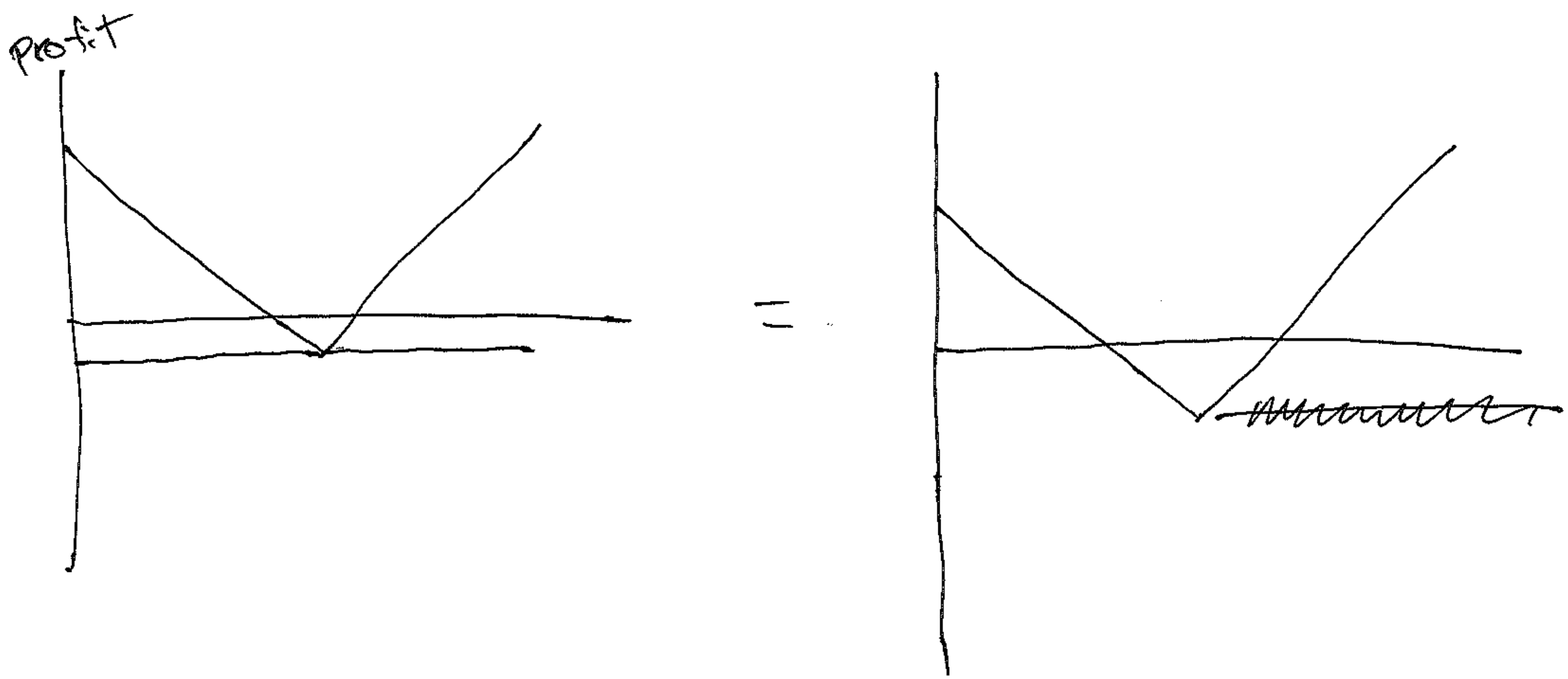
(Naked)

- Straddles
- Strangles
- Butterfly Spreads

# Straddles

Long call + Long put.

same K.
same T.



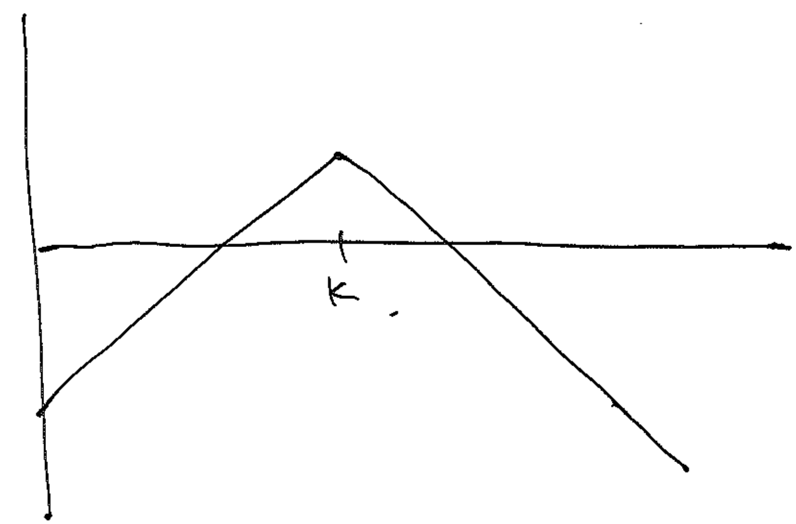

→ make profit either way

→ high premium

## Written Straddles

short call + short put

same K
same T.



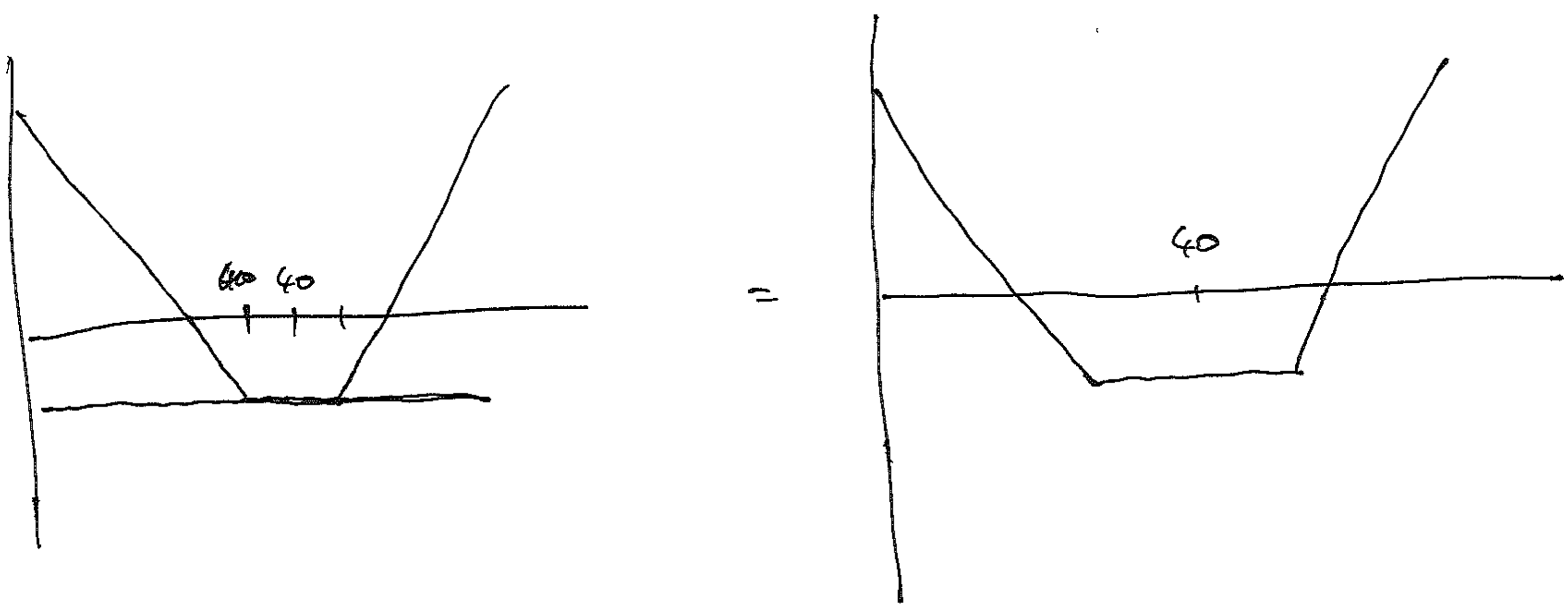

→ profit if volatility is low.

# Strangle

long call $+$ long put same $T$.

$K_1$ $K_2$

→ Same as straddle, but ~~make~~ buy them out-of-money so that the premium will be **cheaper**, + smaller potential loss.



# Butterfly Spreads

short straddle + long strangle