

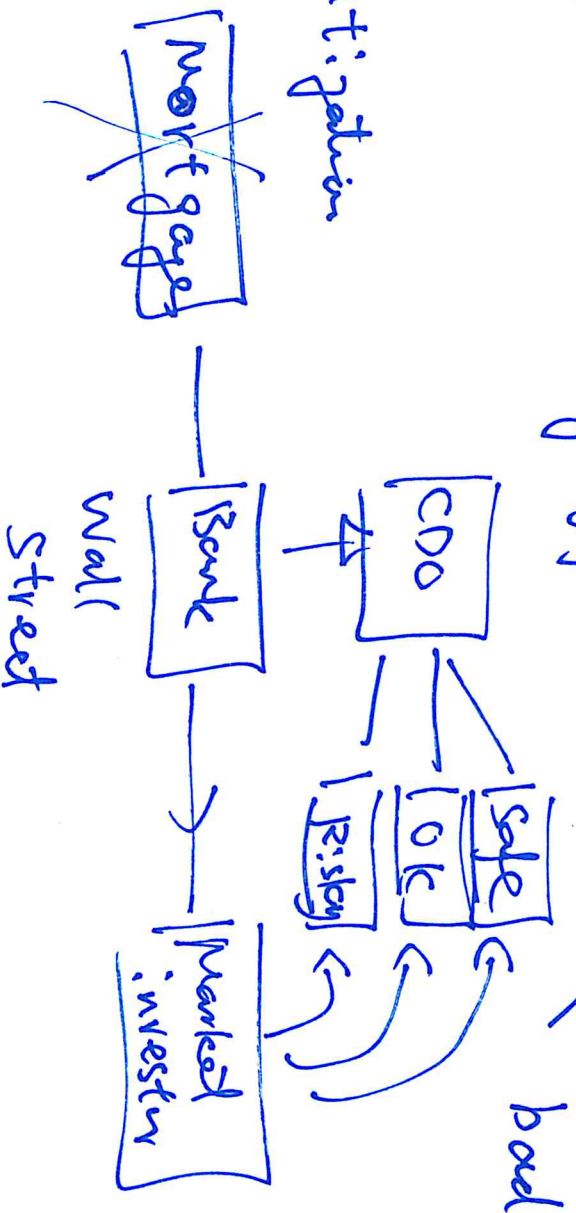
Securitization (正券化) 13-Sep-2018 (1)

ABS (Asset backed security)

CDO (Collateralized Debt obligation)

① Leverage → magnify outcome

② Securitization



Price-driven market

(Quote)

bid price < ask price

(sell to market maker) (buy from market maker)



~~SPR~~ bid-ask spread = ask price - bid price



liquidity

"Order-driven market"

Tencent

HK30

Exchange



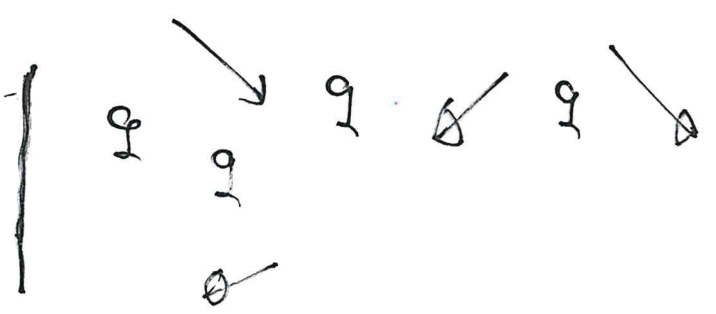
Sell 100 shares of Tencent at \$40

# Basic use of Option (Financial Derivatives)

(3)

① Protection

② Speculation  
Speculate



# Protection

(4)

① Long (Buy) ~~on~~ a stock  stock price  $\downarrow$  (~~lower~~)

Put option (Protection against stock price  $\downarrow$ )

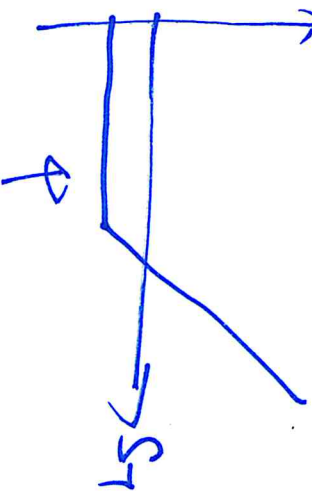
Buy stock + Buy put option

$t=0$

$t=T$

$-S_0$

$S_T$



Buy stock  
put  
(Buy) option

$-P$

$\max(K - S_T, 0)$

$\approx$  call option

Long

$-S_0 - P$

$\widetilde{[S_T + \max(K - S_T, 0)]}$

Payoff

Profit @  $T = \text{Payoff} - \text{FV}(S_0 + P)$

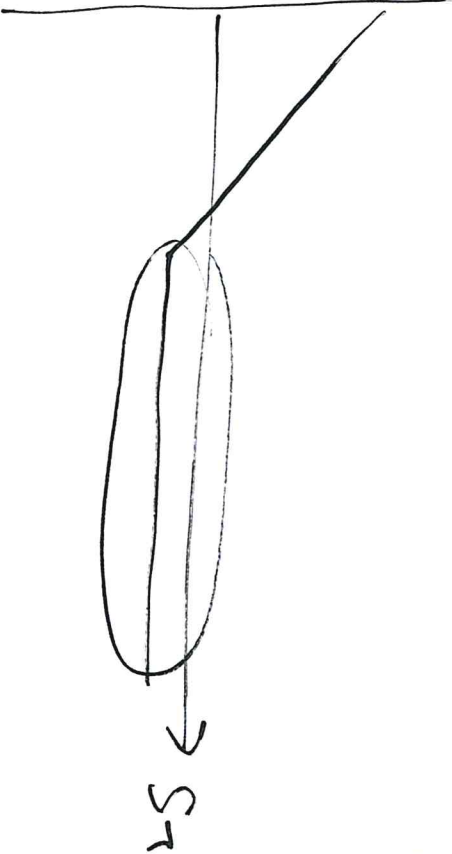
② Short sell stock

☹️ stock price ↑

⑤

Short sell stock + Buy (long) call option "Cap"

Prof.  $\pi$



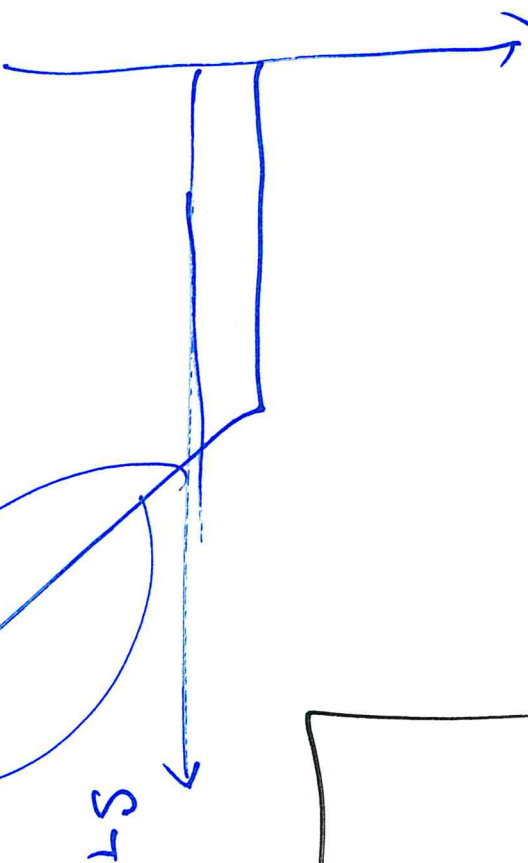
"Similar to a put option"

Market maker

Sell a call option

Profit diagram

Profit



$$\text{Payoff} (S_T - K, 0)$$

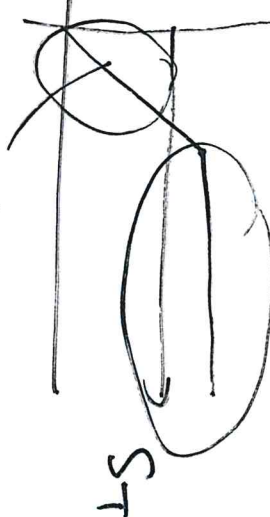
(6)

Sell a call option

+ Buy the underlying asset

} covered call

Profit



Put - call parity

(7)

Synthetic forward  $\rightarrow$

$$= \text{Buy a Call (strike = } K) - \text{Sell a put (strike = } K)$$

$t = 0$

$t = T$

Long call  $-C$

Pay (  $S_T - K, 0$  )

Short put  $+P$

- Pay (  $K - S_T, 0$  )

Total

$$P - C$$

Cost at  $t = 0$

$$S_T - K$$

Payoff



Forward with ~~K~~ forward price =  $K$

Not a "fair"  $\downarrow$

Set  $K$  to be a "fair price"  $\Rightarrow P(K) = C(K)$



Put - call parity (cont'd)

Two ways to get the underlying at T

Not pay net be fair

(8)

① Use Synthetic forward ( ~~see~~ call  $C(K)$  , , put  $P(K)$  )

② Use Standard forward contract :

→ forward price =  $F_{0,T}$

↓ fair price

Zero-cost to enter

② Cost to get the underlying at T. =  $(F_{0,T})$  Pay at T

Pay at T

①  $\frac{C(K) - P(K)}{t=0} \quad K \quad t=T$

Total cost at T  
=  $K + FV(C(K) - P(K))$

Cost of ② at T = Cost of ① at T



$$K + FV(C(K) - P(K)) = F_{0,T}$$

(8)

$$\underline{C(K)} - \underline{P(K)} = PV(F_{0,T}) - \underline{K} \leftarrow \begin{array}{l} \text{"put-call"} \\ \text{parity"} \end{array}$$

fair
strike price of option

" arbitrage "

No - ~~arbitrage~~ arbitrage