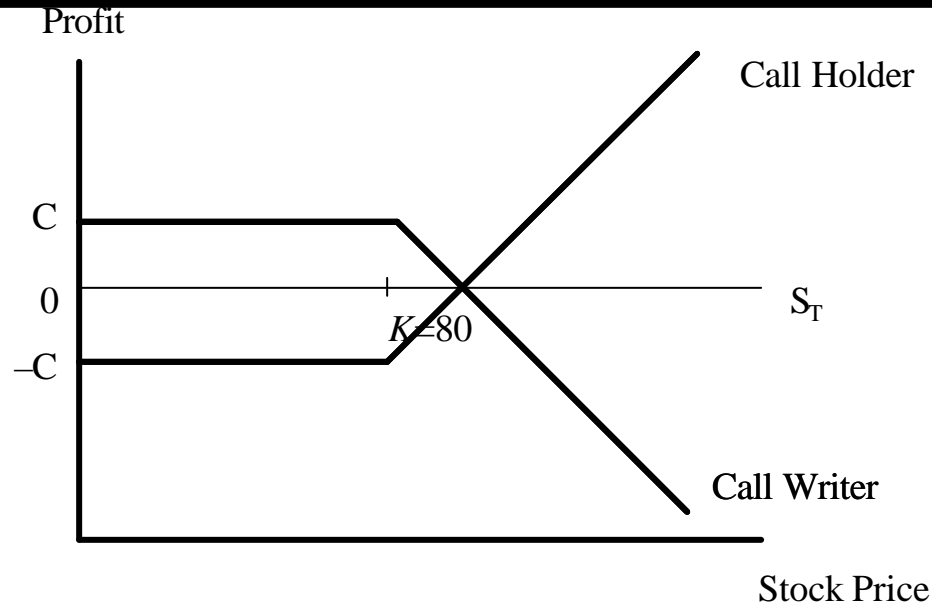


1 Options Trading Strategies

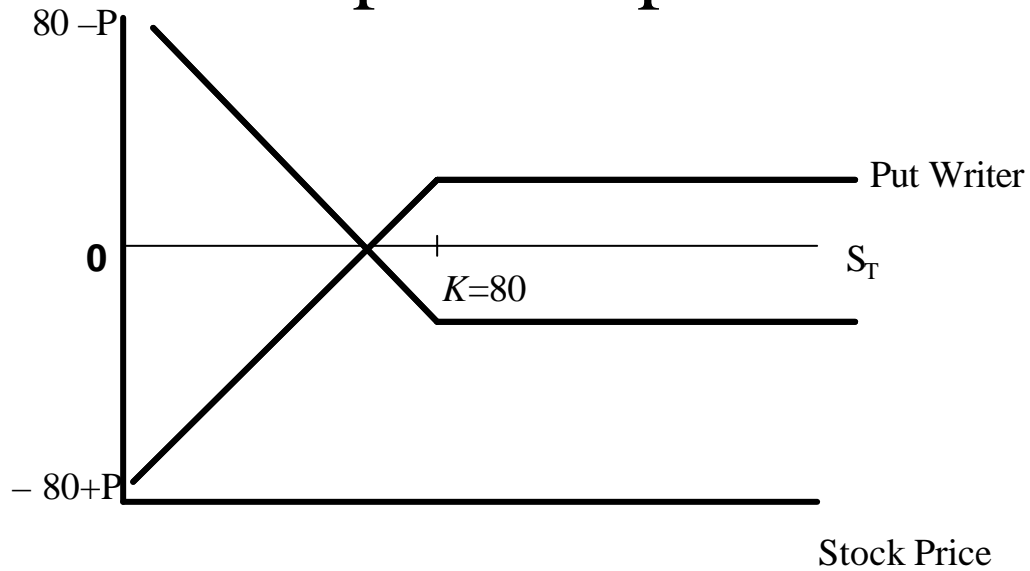
- Strategies with single option plus stock
- Spreads – position with two or more options of the same type.
- Combinations
- Other Payoffs

2

Call Profits: Graph at Expiration



Put Profits: Graph at Expiration



3

Option Strategies

- Take a position in the option and the underlying asset
 - Protective Put - long stock and long put (out-of-money); hedge prob losses
 - Covered Call - long stock and write call (out-of-money);
Forgo upside, earn premiums. Can be viewed as a risk-reduction strategy, converting unknown capital gains to dividends!

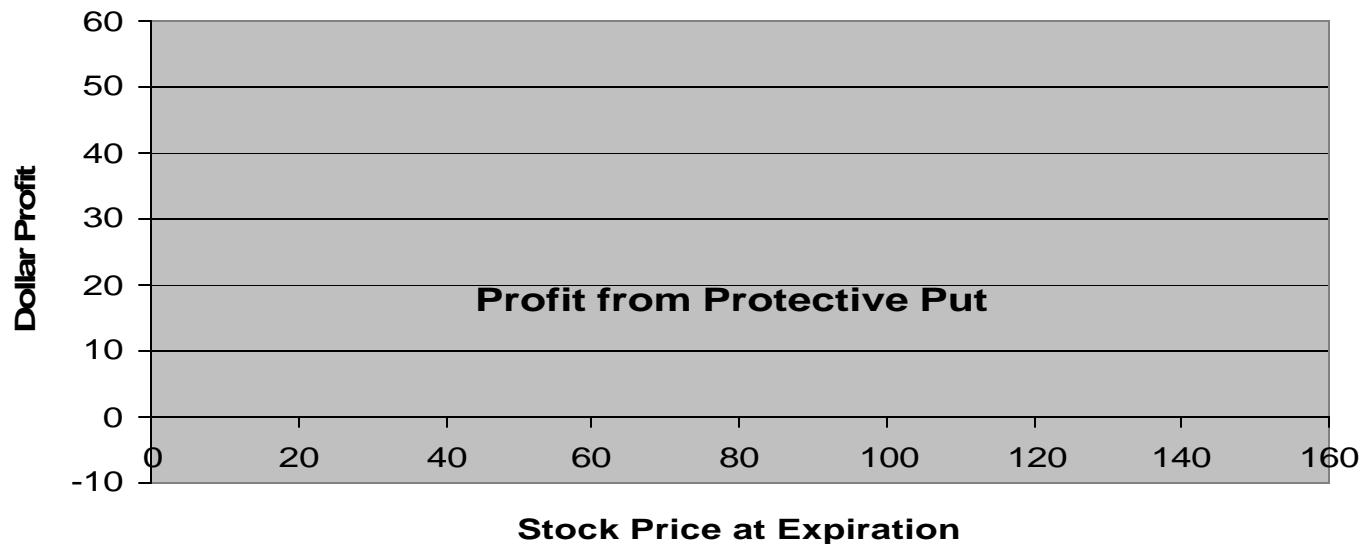
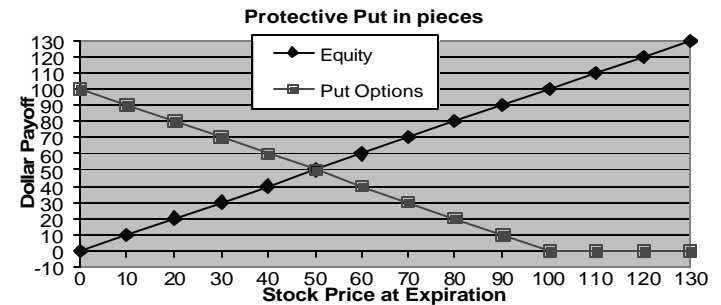
- Spreads -

- Combination:
 - Straddle - long call and long put (same K); Buying volatility
 - Collar – long stock, write calls and long puts (both out-of-money)
buy insurance and forgo upside

4 Strategy: Protective Put

- Long position in Stock ($S_0=100$)
- Long put ($K=100$ and $P_0=2.67$ for one-month)

- Initial Cost: $S_0 + P_0 = 102.67$
- Max Profit: Unlimited, if the stock price rises
- Max Loss: $K - (S_0 + P_0) = -2.67$, if $S_T < K$.
- Breakeven: $S_0 + P_0 = 102.67$
- Bullish but defensive risk posture.
- Profit: $\max(K, S_T) - (S_0 + P_0)$



5 Strategy: Covered Call (buy-write)

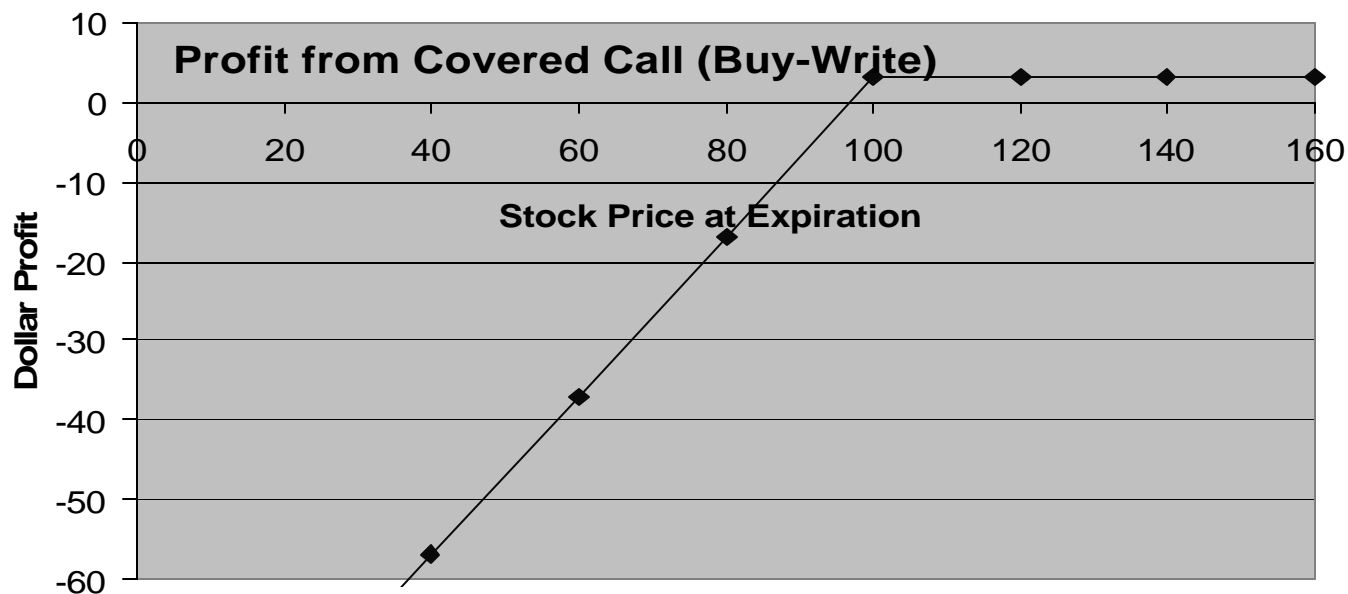
- Long position in stock (current price of 100)
- Write call option at $K=100$ ($C=3.09$ for one month)
 - Popular strategy with institutional investors, in flat to down mkts.
- Neutral to mildly bullish with defensive risk posture.

Initial Cost: $S_0 - C_0 = 96.91$

Max Profit: $K - (S_0 - C_0) = 3.09$, if the call finishes in-the-money

Max Loss: $-(S_0 - C_0) = -96.91$, if the asset price falls to zero

Breakeven: $S_T - C_0 = 96.91$



6 Spread: Bull Call Spread

- Buy call at low K ($K_L=95$; $C=6.29$ for one month)
- Write call at high K ($K_H=105$; $C=1.21$ for one month)

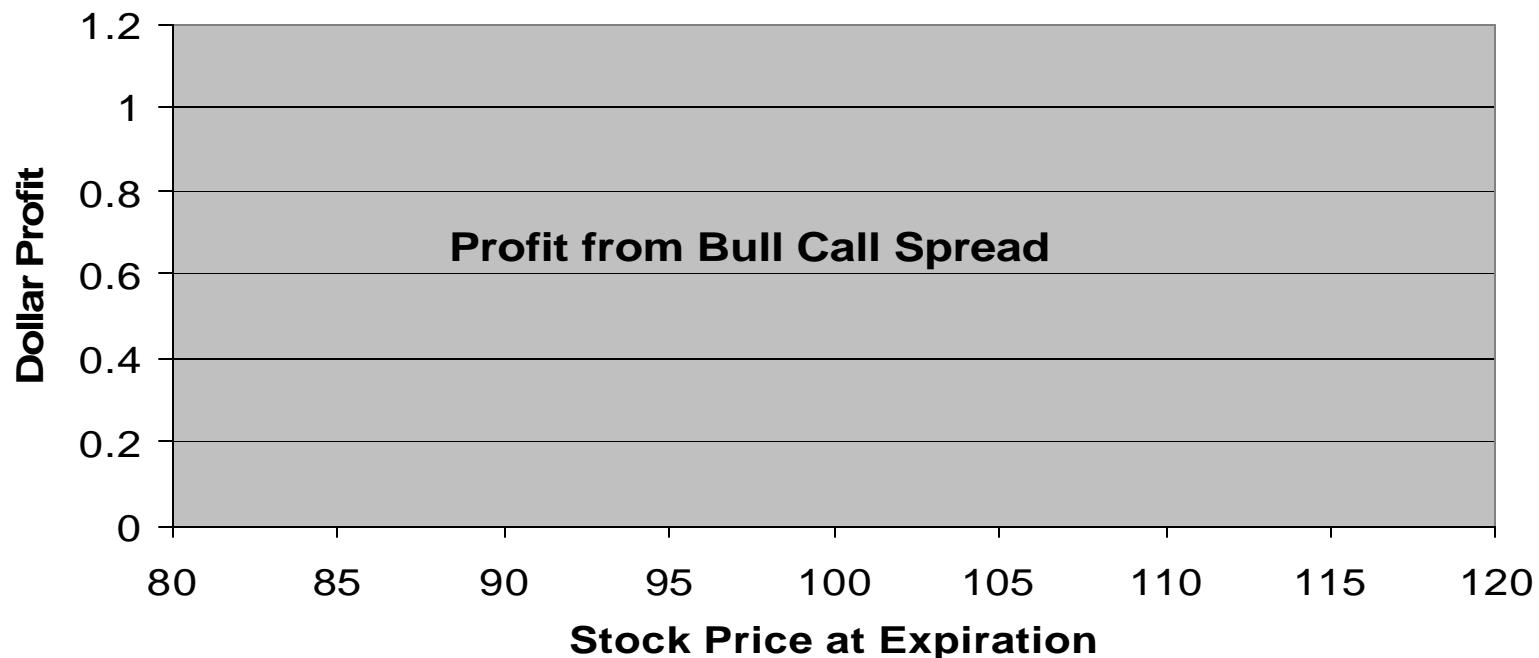
- Mildly bullish with defensive risk posture.

Initial Cost: $C_L - C_H = 6.29 - 1.21 = 5.08$

Max Profit: $(K_H - K_L) - (C_L - C_H) = 4.92$, for any price above K_H

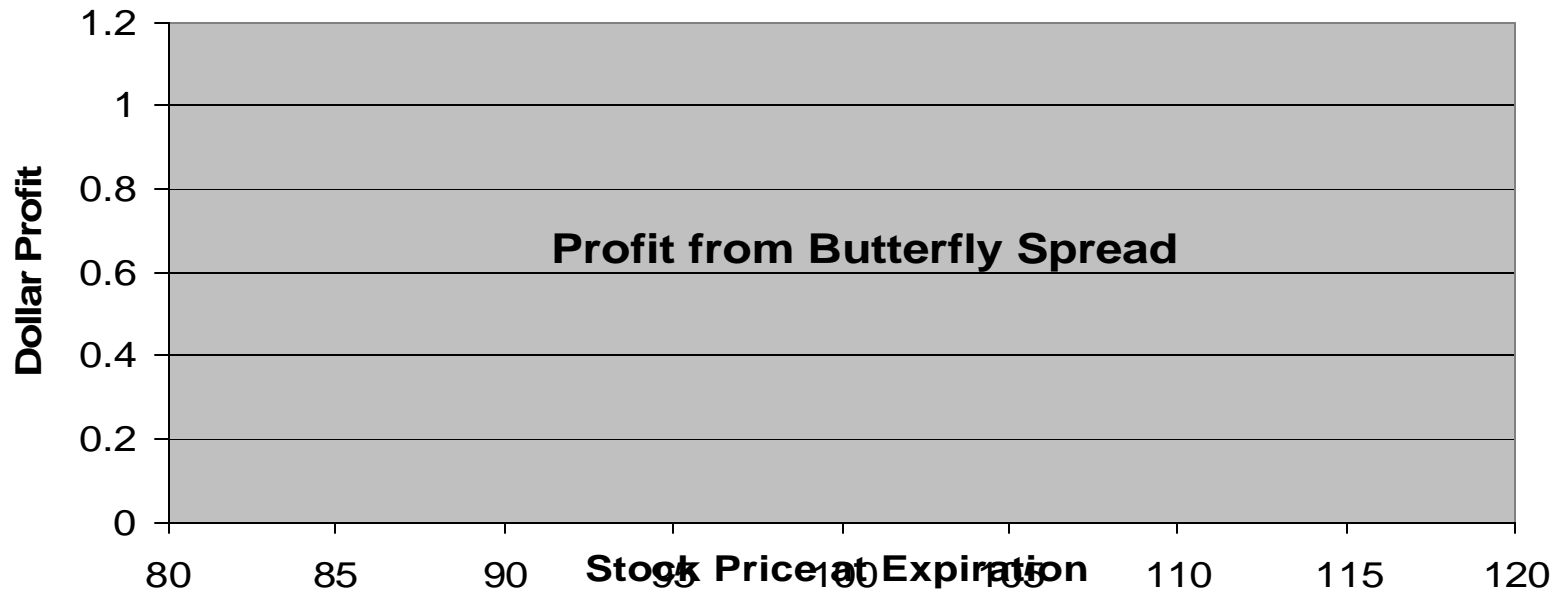
Max Loss: $-(C_L - C_H) = -5.08$, if the asset price falls below K_L

Breakeven: $K_L + C_L - C_H = 100.08$



7 Spread: Butterfly Spread

- Buy call with low strike price, C_L ($K_L=95$; $C_L=6.29$)
- Buy call with high strike price, C_H ($K_H=105$; $C_H=1.21$)
- Write 2 calls with strike halfway between, C_M ($K_M=100$; $C_M=3.09$)
- Expensive (commissions), but potentially big pay off relative to initial inv.
 Initial Cost: $C_L + C_H - 2C_M = 1.32$
 Max Profit: $(K_M - K_L) - (C_L + C_H - 2C_M) = 5 - 1.32 = 3.68$, if $S_T = K_M$
 Max Loss: $-(C_L + C_H - 2C_M) = -1.32$, if $S_T < K_L$ or above $S_T > K_H$
 Breakeven: $K_L + (C_L + C_H - 2C_M) = 96.32$ and $K_H - (C_L + C_H - 2C_M) = 103.67$

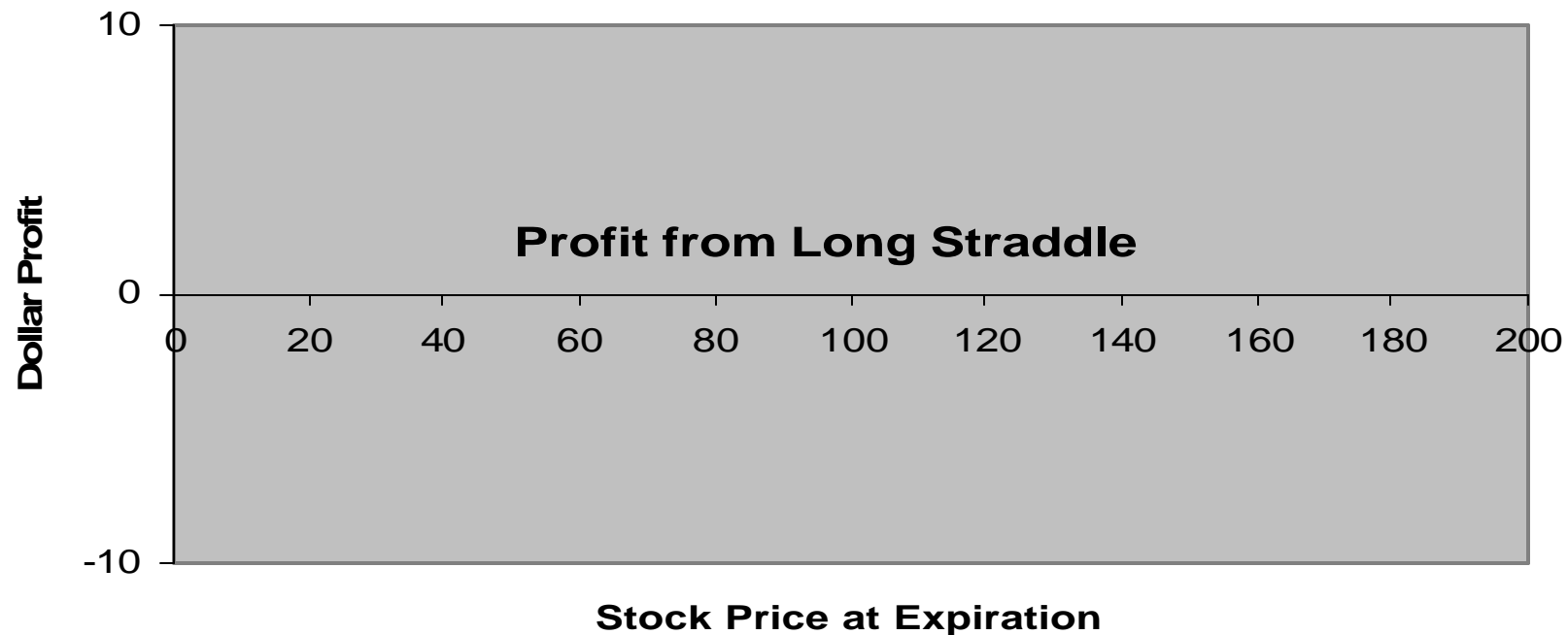


8 Calendar Spread

- Write call with short expiration (one month), C_{Short} ($K=100$; $C_S=3.09$)
- Buy call with long expiration (two months), C_{Long} ($K=100$; $C_L=4.48$)
-
- Initial Cost: $C_L - C_S = 4.48 - 3.09 = 1.39$
Max Profit: Need model for price of long dated option.
Max Loss:
Breakeven:

9 Combination: Straddle

- Buy call (K=100; $C_0 = 3.08$ for one month)
- Buy put (K=100; $P_0 = 2.67$ for one month)
- Neutral on price direction, high volatility; speculative but limited risk.
Initial Cost: $C_0 + P_0 = 5.75$
Max Profit: Unlimited, if S_T rises sharply; $K - (C_0 + P_0) = 94.25$, if $S_T = 0$
Max Loss: $-(C_0 + P_0) = -5.75$, if $S_T = K$
Breakeven Price: $K + (C_0 + P_0) = 105.75$, and $K - (C_0 + P_0) = 94.24$



10 Combination: Sell Straddle

- Write put (K=100; $P_0 = 2.67$ for one month)
- Write call (K=100; $C_0 = 3.08$ for one month)

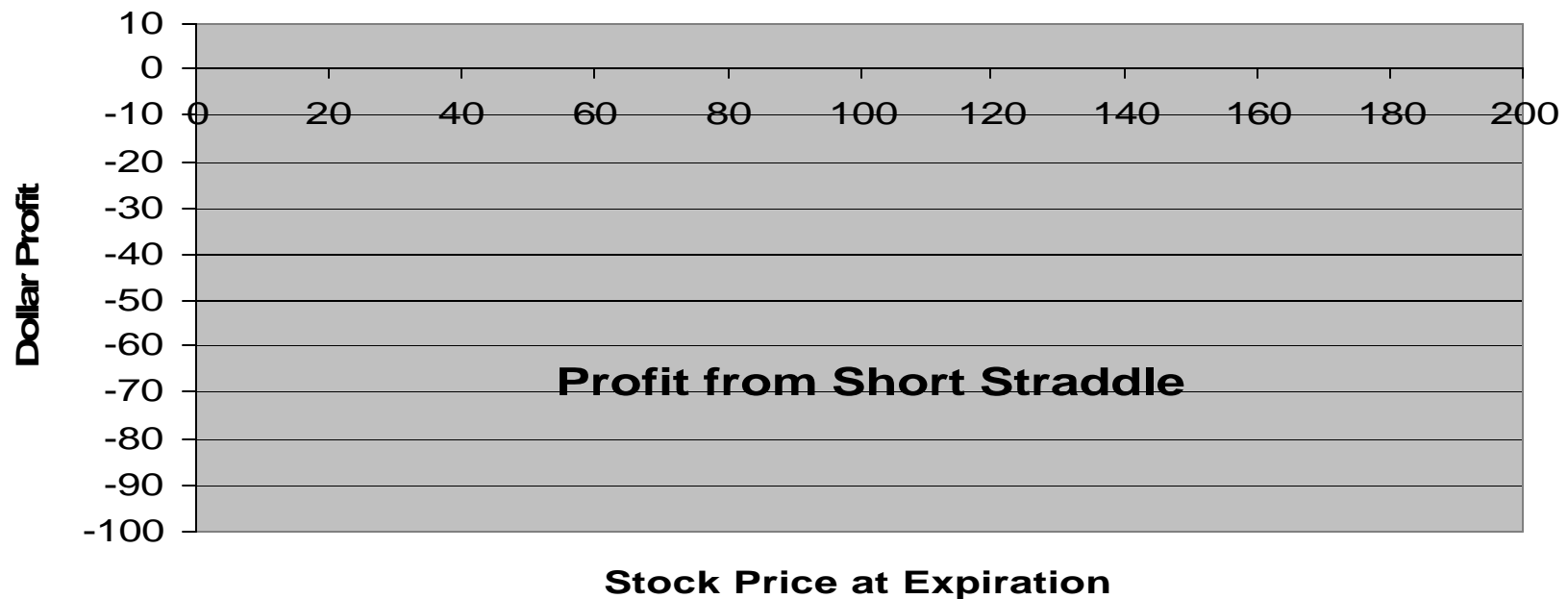
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Initial Cost: Credit of $C_0 + P_0 = 5.75$

Max Profit: $C_0 + P_0 = 5.75$, if $S_T = K$

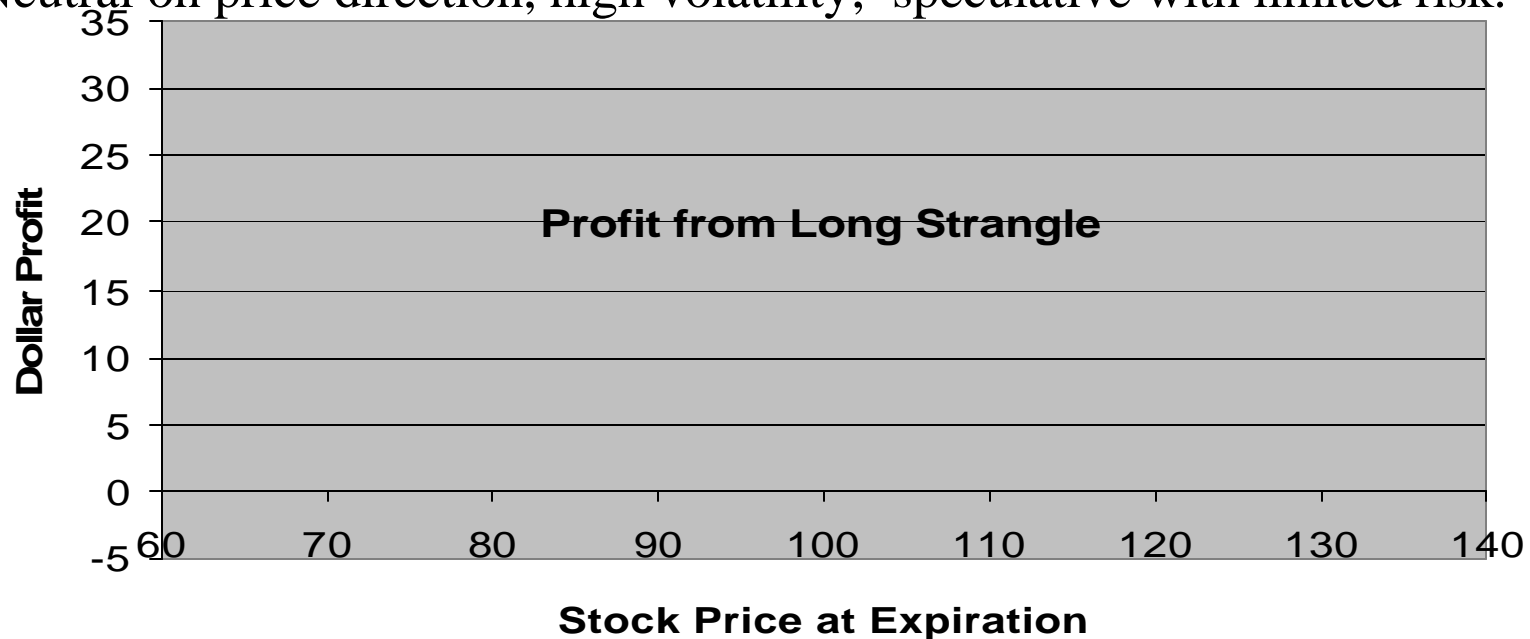
Max Loss: Unlimited, if S_T rises sharply, and $C_0 + P_0 - K = -94.25$, if $S_T = 0$.

Breakeven: $K + C_0 + P_0 = 105.75$, or $K - C_0 - P_0 = 94.25$



11 Combination: Strangle

- Buy put with low exercise price ($K_L=95$; $P_0 = 0.89$ for one month)
 - Buy call with high exercise price ($K_H=105$; $C_0 = 1.21$ for one month)
 - .
 - Initial Cost: $C_0 + P_0 = 2.10$
 - Max Profit: Unlimited, if S_T rises sharply, and $K-(C_0+P_0)=92.90$, if $S_T=0$.
 - Max Loss: $-(C_0 + P_0) = -2.10$ for $K_L < S_T < K_H$ and both options worthless.
 - Breakeven: $K_L-(C_0+P_0) = 92.90$ and $K_H+(C_0+P_0) = 107.10$
- Neutral on price direction, high volatility; speculative with limited risk.

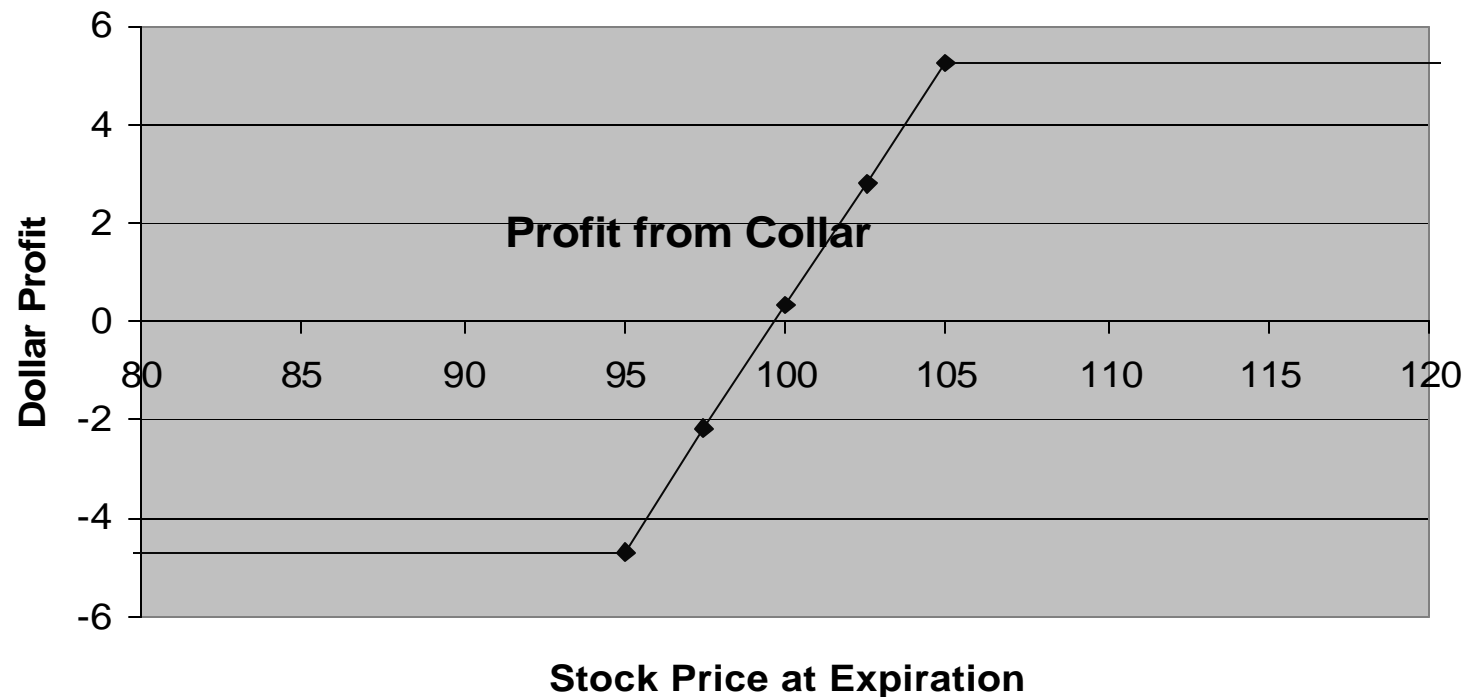


12 Combination: Collar

- Suppose you own stock with price of \$100.
- Buy put with low exercise price ($K_L=95$; $P_0 = 0.89$)
- Write call with high exercise price ($K_H=105$; $C_0 = 1.21$)

Gain downside protection, but limit upside potential.

Executives (e.g. director at Enron) can lock-in gains (OTC) at zero net cost.



13 Strategy: Other strategies

- Other strategies - an infinite combination of possibilities.
- Spreads
 - Bull spread with puts and calls.
 - Bear spread with puts and calls (no initial inv)
 - Butterfly spread with puts and calls options; long and short.
 - Calendar spread with puts and calls; long and short (reverse).
 - Calendar spread neutral bull (high strike prices), bearish (lower strike prices).
 - Diagonal spread – both expiration date and strike price differ.
 - box spreads long and short – bear plus bull spread. Zero cost, arb position
- Combinations
 - Strip – long position in one call and two puts with same K and date.
 - Strap – long position in two calls and one put with same K and date.