

FE620 Pricing and Hedging

Lecture 6: Mechanics of Options Markets

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Review of Option Types

- ▶ A call is an option to buy
- ▶ A put is an option to sell
- ▶ A European option can be exercised only at the end of its life
- ▶ An American option can be exercised at any time

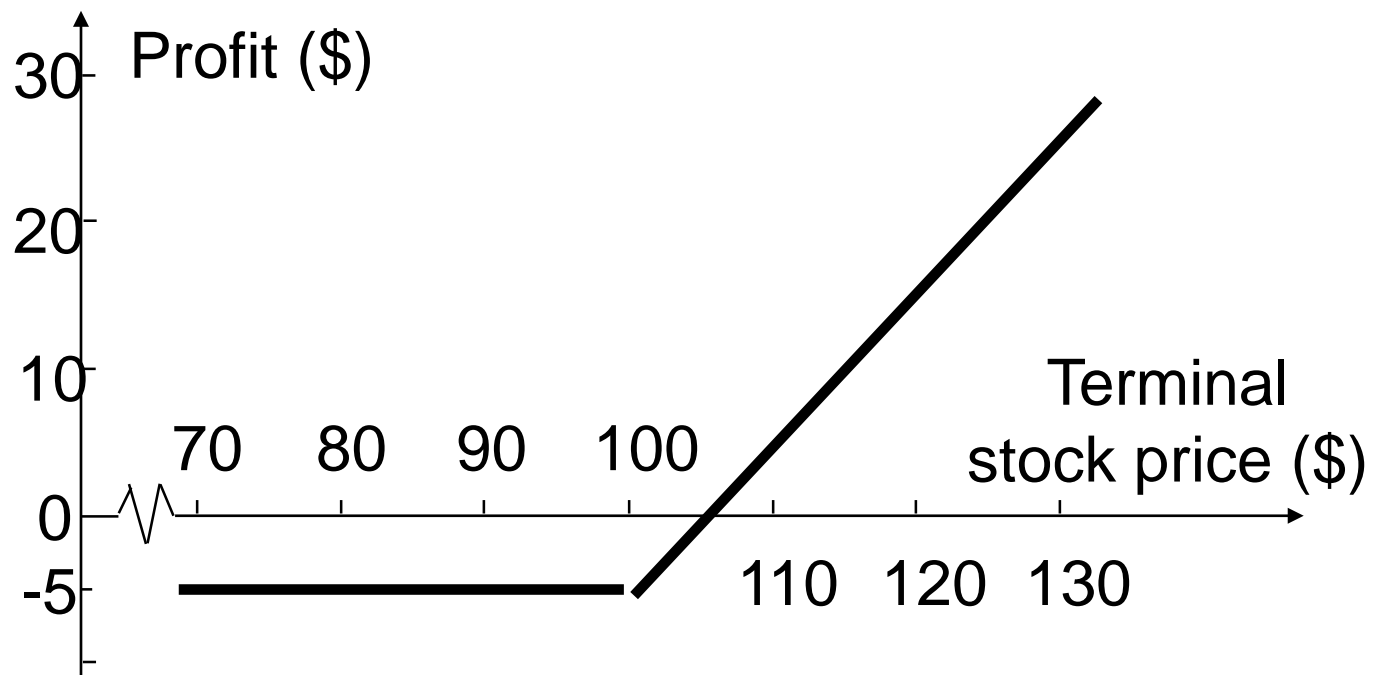
Option Positions

- ▶ Long call
- ▶ Long put
- ▶ Short call
- ▶ Short put

Long Call

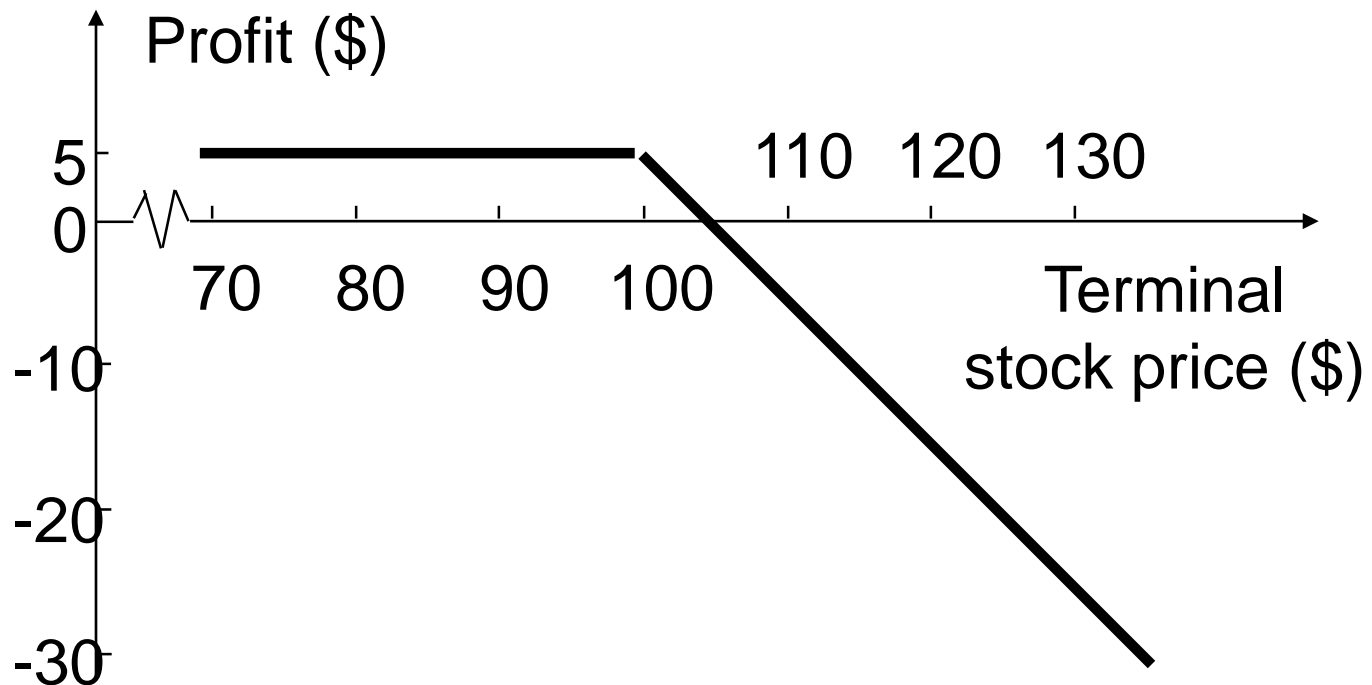
(Figure 10.1, Page 210)

Profit from buying one European call option: option price = \$5, strike price = \$100, option life = 2 months



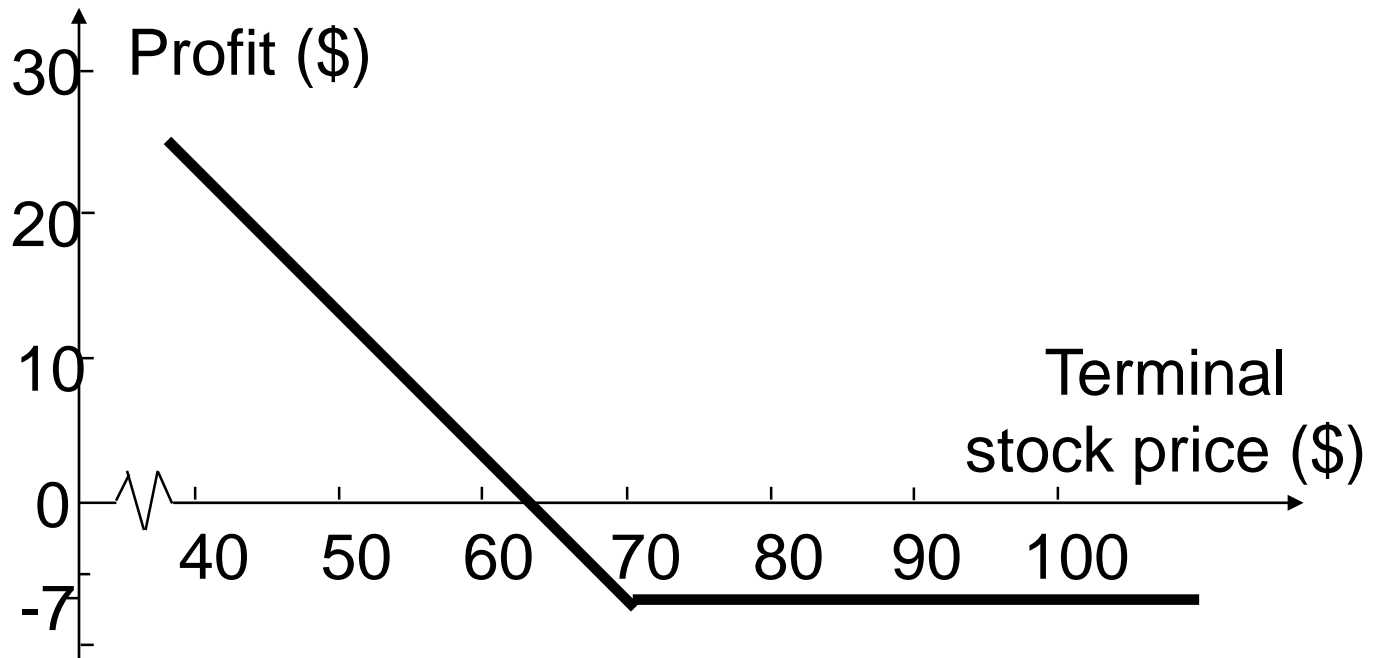
Short Call (Figure 10.3, page 212)

Profit from writing one European call option: option price = \$5, strike price = \$100



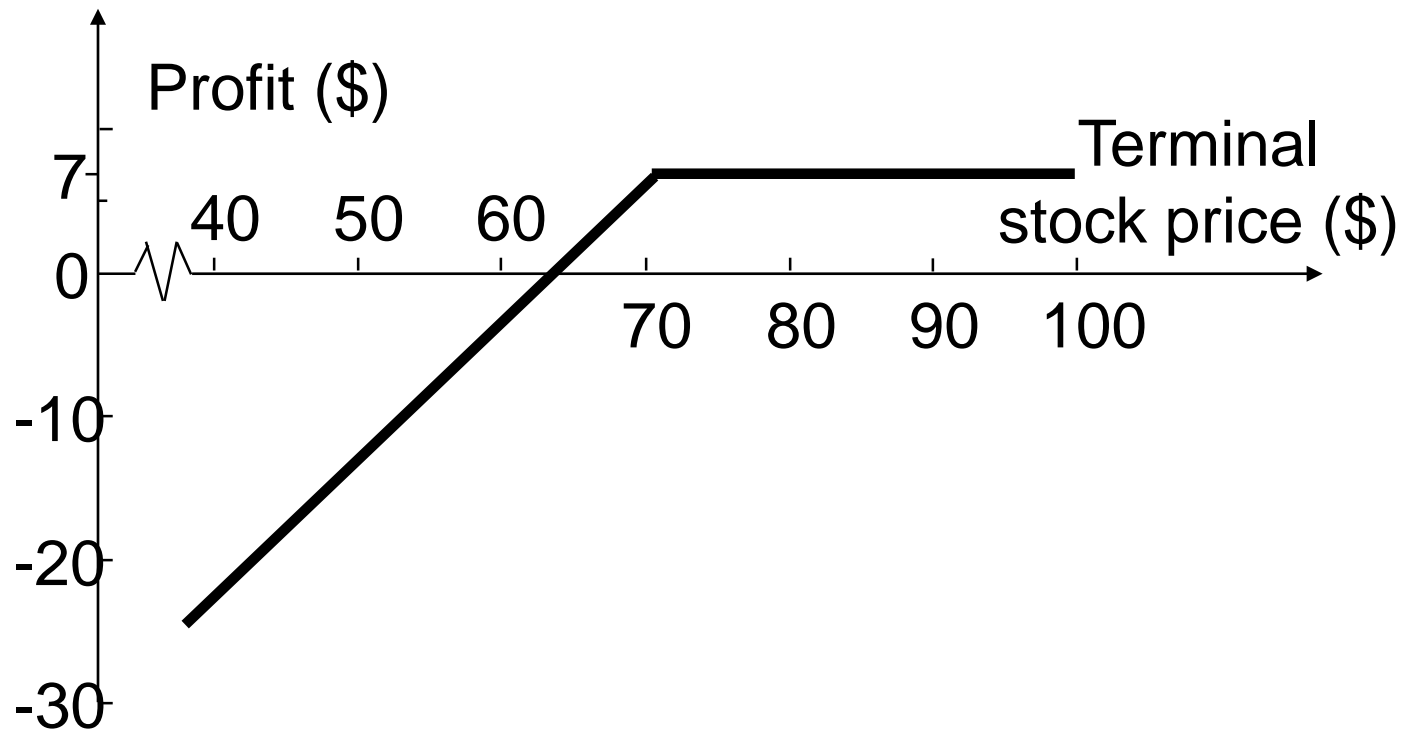
Long Put (Figure 10.2, page 211)

Profit from buying a European put option: option price = \$7, strike price = \$70



Short Put (Figure 10.4, page 212)

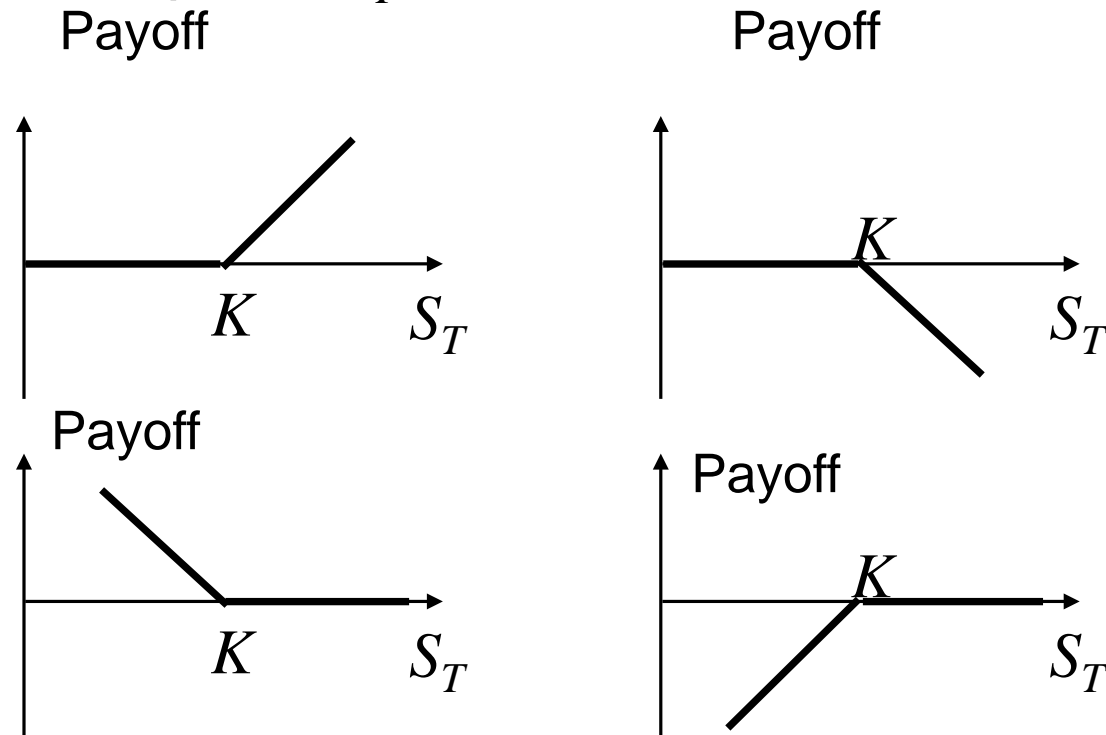
Profit from writing a European put option: option price = \$7, strike price = \$70



Payoffs from Options

What is the Option Position in Each Case?

K = Strike price, S_T = Price of asset at maturity



Assets Underlying Exchange-Traded Options

Page 214–215

- ▶ Stocks
- ▶ ETFs (and other ETPs)
- ▶ Foreign Currency
- ▶ Stock Indices
- ▶ Futures

Specification of Exchange-Traded Options

- ▶ Expiration date
- ▶ Strike price
- ▶ European or American
- ▶ Call or Put (option class)

Terminology

Moneyiness :

- At-the-money option
- In-the-money option
- Out-of-the-money option

Terminology

(continued)

- ▶ Option class
- ▶ Option series
- ▶ Intrinsic value
- ▶ Time value

Dividends & Stock Splits

(Page 217–218)

- ▶ Suppose you own N options with a strike price of K :
 - No adjustments are made to the option terms for cash dividends
 - When there is an n -for- m stock split,
 - the strike price is reduced to mK/n
 - the no. of options is increased to nN/m
 - Stock dividends are handled similarly to stock splits

Dividends & Stock Splits

(continued)

- ▶ Consider a call option to buy 100 shares for \$20/share
- ▶ How should terms be adjusted:
 - for a 2-for-1 stock split?
 - for a 5% stock dividend?

Market Makers

- ▶ Most exchanges use market makers to facilitate options trading
- ▶ A market maker quotes both bid and ask prices when requested
- ▶ The market maker does not know whether the individual requesting the quotes wants to buy or sell

Margin (Page 221–222)

- ▶ Margin is required when options are sold
- ▶ When a naked option is written the margin is the greater of:
 - A total of 100% of the proceeds of the sale plus 20% of the underlying share price less the amount (if any) by which the option is out of the money
 - A total of 100% of the proceeds of the sale plus 10% of the underlying share price (call) or exercise price (put)
- ▶ For other trading strategies there are special rules

Warrants

- ▶ Warrants are options that are issued by a corporation or a financial institution
- ▶ The number of warrants outstanding is determined by the size of the original issue and changes only when they are exercised or when they expire

Warrants

(continued)

- ▶ The issuer settles up with the holder when a warrant is exercised
- ▶ When call warrants are issued by a corporation on its own stock, exercise will usually lead to new treasury stock being issued

Employee Stock Options (see also Chapter 16)

- ▶ Employee stock options are a form of remuneration issued by a company to its executives
- ▶ They are usually at the money when issued
- ▶ When options are exercised the company issues more stock and sells it to the option holder for the strike price
- ▶ Expensed on the income statement

Convertible Bonds

- ▶ Convertible bonds are regular bonds that can be exchanged for equity at certain times in the future according to a predetermined exchange ratio
- ▶ Usually a convertible is callable
- ▶ The call provision is a way in which the issuer can force conversion at a time earlier than the holder might otherwise choose