Chapter 15

Options Markets

15.1 The Option Contract

- Buy - Long
- Sell - Short
- Call—the right to buy
- Put—the right to sell
- Key Elements
- – Exercise or Strike Price
- – Premium or Price of the option
- – Maturity or Expiration

Option Terminology

1. What is a listed call option?
   - A contract giving the holder the right to buy 100 shares of stock at a preset price called the exercise or strike price.
   - Expirations of 1,2,3,6,& 9 months and sometimes 1 year are normal contract periods. Contracts expire on the Saturday following the third Friday of the expiration month.
   - Contracts may be sold prior to maturity.

Option Terminology

2. What is a listed *Put option?*

A *contract* giving the holder the *right* to *sell 100* shares of stock at a preset price

Option Characteristics

- If a call option holder wishes to purchase the stock, he or she will *exercise* the option. The option holder must pay the *exercise price* to the option writer.
- The cost of an option is called the premium and it is a small percentage of the cost of the underlying asset. The option *buyer* pays the cost; the option *writer* receives the cost at the time of sale of the option.
- The underlying *company* is not involved in the option market.
- Options are a *zero sum* game.

American vs. European Options

American: the option can be exercised at any date after purchase.

European: the option can only be exercised immediately before expiration

Market and Exercise Price Relationships

In the Money - exercise of the option would be profitable

Call: market price>exercise price

Put: exercise price>market price

Out of the Money - exercise of the option would not be profitable

Call: market price<exercise price

Put: exercise price<market price

At the Money - exercise price and asset price are equal

IBM Option Quotes

Prices at close February 06, 2009

IBM (IBM)		Underlying stock price: 96.14					
		Call			Put		
Expiration	Strike	Last	Volume	Open Interest	Last	Volume	Open Interest
Feb	90	6.83	2501	17389	0.80	2504	9336
Mar	90	8.70	699	6764	2.60	1491	5072
Apr	90	9.96	101	8095	3.70	568	11298
Jul	90	13.44	994	5638	7.03	176	4066
Feb	95	3.20	6342	14541	2.25	2981	2749
Mar	95	5.30	1182	5319	4.28	918	3701
Apr	95	6.75	561	20533	5.63	779	8058
Jul	95	9.80	141	4628	9.00	81	620
Feb	100	1.00	7929	12437	4.90	782	599
Mar	100	2.80	3946	10965	6.47	1206	238
Apr	100	4.10	1517	8839	7.83	90	2385
Jul	100	7.35	115	4039	11.66	25	461

Option Terminology

3. Uses of options:
   a. To hedge changes in stock price.

   b. Change your *risk and return profile*
      - For example, buying a call is analogous to buying stock on margin.

   c. Short sale constraints can be avoided with puts.

Option Clearing Corporation OCC

- OCC is jointly owned by option exchanges
- OCC backs performance of both counterparties
  - To limit OCC's risk, option seller (or writer) must post margin. Margin varies with option price and whether the option position is covered or exposed.
- When an option is exercised an option seller is randomly selected.
  - If a call is exercised the selected call writer must deliver 100 shares of stock in exchange for receiving the strike price.
  - If a put is exercised the selected put writer must purchase 100 shares of stock at the strike price.

Types of Options

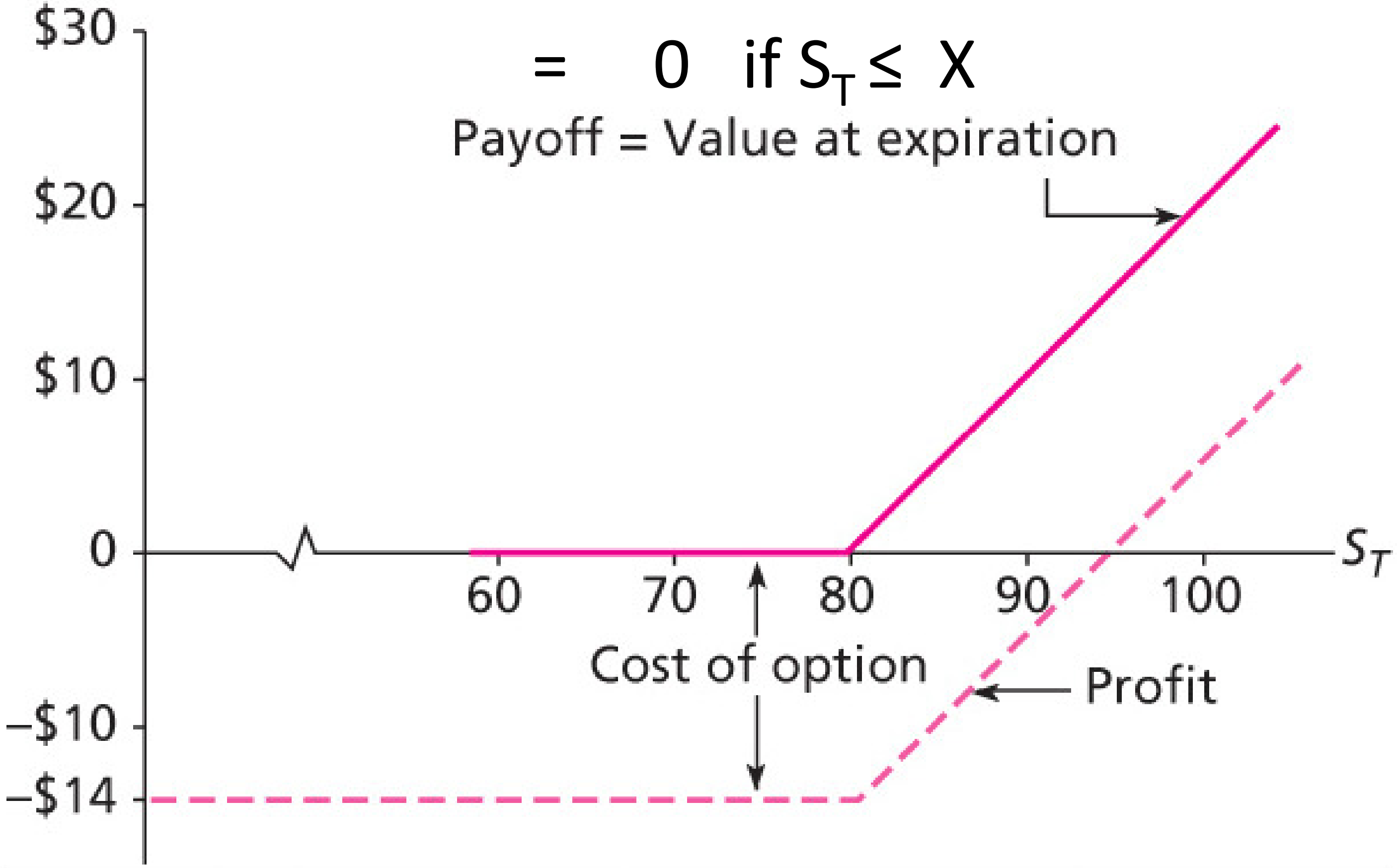
Types of options:

- *Listed Options*
- *OTC Options*
- Index Options
- Options on Futures
- Foreign Currency Options
- Interest Rate Options
- Exotic Options

Values at Expiration: Call Option

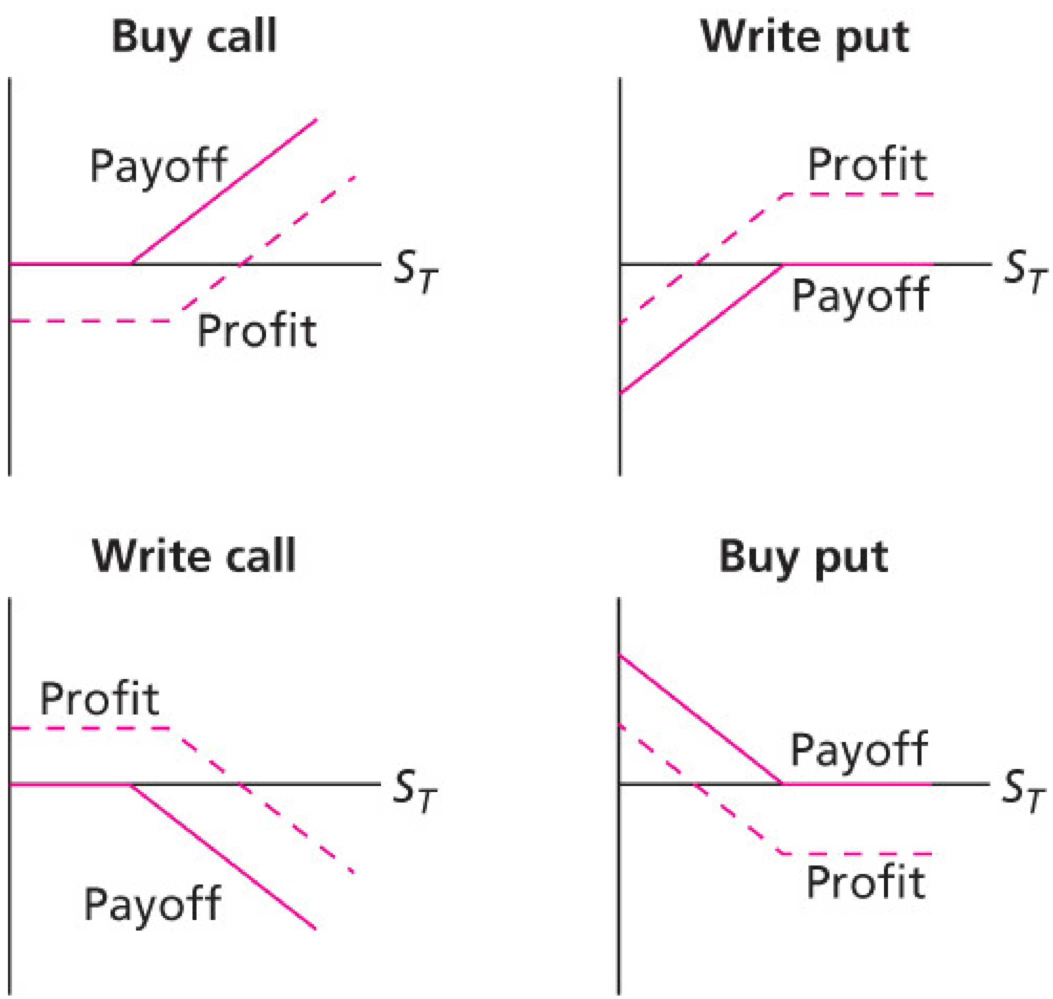
Payoff to call holder = S_T - X if S_T > X

= 0 if $S_T \leq$ X

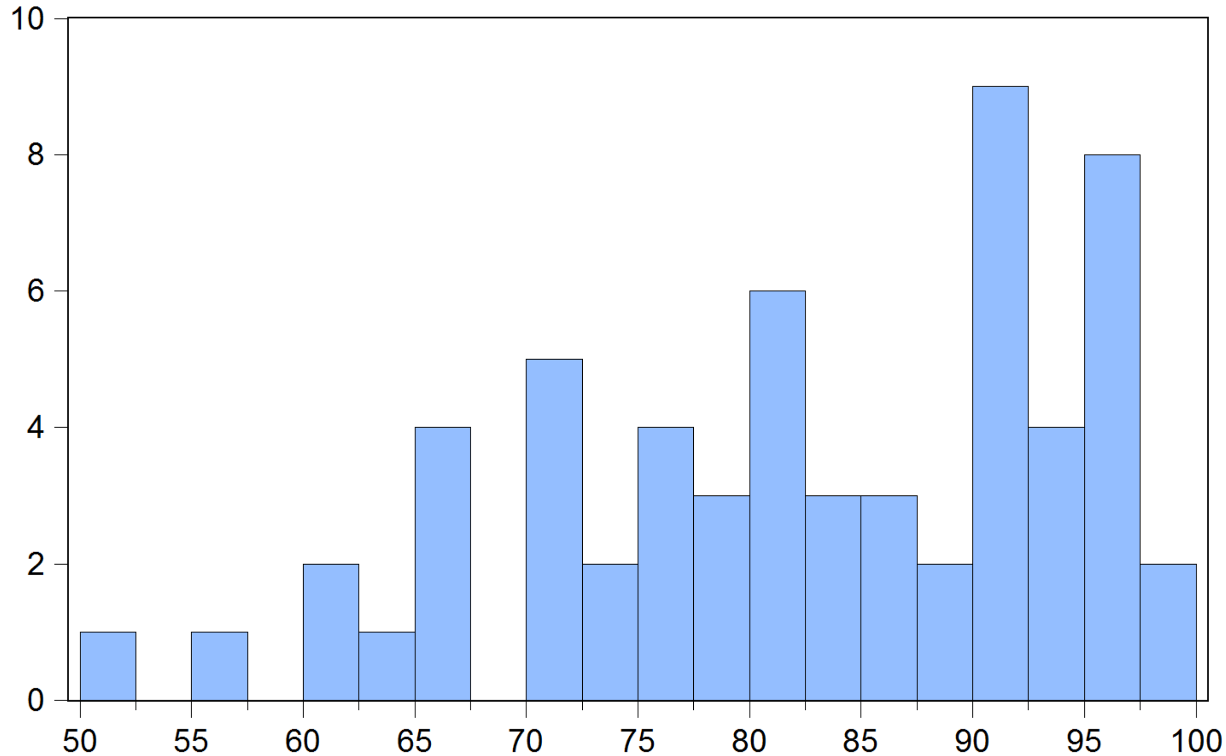


Stock price	$60	$70	$80	$90	$100
Option value	0	0	0	10	20

Values at Expiration: Call and Put Options



Midterm 2



Series: MID2
Sample 1 64
Observations 60

Mean	82.11667
Median	83.50000
Maximum	99.00000
Minimum	51.00000
Std. Dev.	11.91082
Skewness	-0.580334
Kurtosis	2.520667
Jarque-Bera	3.942278
Probability	0.139298