Chapter 3
Overview of Security Types

Concept Questions

1. The two distinguishing characteristics are: (1) all money market instruments are debt instruments (i.e., IOUs), and (2) all have less than 12 months to maturity when originally issued.

2. Preferred stockholders have a dividend preference and a liquidation preference. The dividend preference requires that preferred stockholders be paid before common stockholders. The liquidation preference means that, in the event of liquidation, the preferred stockholders will receive a fixed face value per share before the common stockholders receive anything.

3. The PE ratio is the price per share divided by annual earnings per share (EPS). EPS is the sum of the most recent four quarters' earnings per share.

4. The current yield on a bond is very similar in concept to the dividend yield on common and preferred stock.

5. Volume in stocks is quoted in round lots (multiples of 100). Volume in corporate bonds is the actual number of bonds. Volume in options is reported in contracts; each contract represents the right to buy or sell 100 shares. Volume in futures contracts is reported in contracts, where each contract represents a fixed amount of the underlying asset.

6. You make or lose money on a futures contract when the *futures* price changes, not the current price for immediate delivery (although the two are closely related).

7. Open interest is the number of outstanding contracts. Since most contract positions will be closed before maturity, it will usually shrink as maturity approaches.

8. A futures contact is a contract to buy or sell an asset at some point in the future. Both parties in the contract are legally obligated to fulfill their side of the contract. In an option contract, the buyer has the right, but not the obligation, to buy (call) or sell (put) the asset. This option is not available to the buyer of a futures contract. The seller of a futures or option contract has the same responsibility to deliver the underlying asset. The difference is the seller of a future knows she must deliver the asset, while the seller of an option contract is uncertain about delivery since delivery is at the option purchaser's discretion.

9. A real asset is a tangible asset such as a land, buildings, precious metals, knowledge, etc. A financial asset is a legal claim on a real asset. The two basic types of financial assets are primary assets and derivative assets. A primary asset is a direct claim on a real asset. A derivative asset is basically a claim (or potential claim) on a primary asset or even another derivative asset.

10. Initially, it might seem that the put and the call would have the same price, but this is not correct. If the strike price is exactly equal to the stock price, the call option must be worth more. Intuitively, there are two reasons. First, there is no limit to what you can make on the call, but your potential gain on the put is limited to $100 per share. Second, we generally expect that the stock price will increase, so the odds are greater that the call option will be worth something at maturity.

Core Questions

1. Dividend yield = .013 = \$.75 / P_0 thus P_0 = \$.75 / .013 = \$57.69
Stock closed up \$.26, so yesterday's closing price = \$57.69 – 0.26 = \$57.43
18,649,130 shares were traded, which means 18,649,130 / 100 = 186,491 round lots of stock were traded.

2. PE = 15; EPS = P_0 / 15 = \$57.69 / 15 = \$3.846
EPS = NI / shares; so NI = \$3.846(100,000,000) = \$384,615,385

3. Dividend yield is 3.4%, so annualized dividend is .034(\$74.20) = \$2.52. This is just four times the last quarterly dividend, which is thus \$2.52 / 4 = \$.63/share.

4. PE = 21.5; EPS = P_0 / 21.5 = \$74.20 / 21.50 = \$3.45

5. The total par value of purchase = 3,000(\$1,000) = \$3,000,000
Next payment = (\$3,000,000 × .072) / 2 = \$108,000
Payment at maturity = \$108,000 + 3,000,000 = \$3,108,000

Remember, the coupon payment is based on the par value of the bond, not the price.

6. Contract to buy = 300 / 50 = 6
Purchase price = 6 × 50 × \$2,025 = \$607,500
P = \$2,075: Gain = (\$2,075 – 2,025) × 6 × 50 = \$15,000
P = \$1,975: Gain = (\$1,975 – 2,025) × 6 × 50 = –\$15,000

7. Cost of contracts = \$3.85 × 10 × 100 = \$3,850
If the stock price is \$82, the value is: (\$82 – 75) × 10 × 100 = \$7,000
Dollar return = \$7,000 – 3,850 = \$3,150
If the stock price is \$72, the call is worthless, so the dollar return is –\$3,850.

8. The stock is down 1.2%, so the price was \$48.92 / (1 – .012) = \$49.51

9. The YTM is given in the quote as 7.482%.
Price = (93.231 / 100)\$1,000 = \$932.31
Current yield = Annual coupon payment / Price = \$68.50 / \$932.31 = 7.347%

10. Next payment = 15(.06850 / 2)(\$1,000) = \$513.75

Intermediate Questions

11. Open interest in the March contract is 597,913 contracts.
Since the standard contract size is 5,000 bushels, sell 225,000 / 5,000 = 45 contracts.
You'll deliver 45(5,000) = 225,000 bushels of corn and receive 45(5,000)(\$4.52) = \$1,017,000

12. The price you sold the contracts was 468 (\$4.68) and you closed the position at 465.375 (\$4.65375).
So, the total profit was (\$4.68 – 4.65375) × 5,000 × 25 = \$3,281.25

13. Initial value of position = 15(5,000)(\$4.7225) = \$354,187.50
Final value of position = 15(5,000)(\$4.62125) = \$346,593.75
Dollar profit = \$346,593.75 – 354,187.50 = –\$7,593.75

14. The right to sell shares is a put option on the stock; the January put with a strike price of $27 has an ask price of $1.41. Since each stock option contract is for 100 shares of stock, you're looking at 2,000/100 = 20 option contracts. Thus, the cost of purchasing this right is 20($1.41)(100) = $2,820.

15. The cheapest put contract (that traded on this particular day) is the $25. The most expensive option is the $40. The first option is the furthest out of the money, while the second option is the furthest in the money. Remember, a put gives the right to sell, and we always want to "sell high."

16. Case 1: Payoff = $27 – 25 = $2/share. Dollar return = $2(20)(100) – $2,820 = $1,180
Return on investment per 3 months = $1,180 / $2,820 = 41.84%
Annualized return on investment = $(1.4184)^{12/3} - 1 = 304.80\%$

Case 2: The option finishes worthless, so payoff = $0. Dollar return = –$2,820
Return on investment = –100% over all time periods.

17. The very first call option listed has a strike price of 10 and a quoted premium of $5.50. This can't be right because you could buy an option for $5.50 and immediately exercise it for another $10. You can then sell the stock for its current price of $20.25, earning a large, riskless profit. To prevent this kind of easy money, the option premium must be at least $10.25. Similarly, the September 30 put is quoted at $8.75. You could buy the put and immediately exercise it. The put premium must be at least $9.75.

18. If you buy the stock, your $28,000 will purchase 700 shares, or 7 round lots. A call contract costs $400, so you can buy 70 of them. If, in six months, MMEE is selling for $48, your stock will be worth 700 shares × $48 = $33,600. Your dollar gain will be $33,600 less the $28,000 you invested, or $5,600. Since you invested $28,000, your return for the six-month period is $5,600/$28,000 = 20%. To annualize your return, we need to compute the effective annual return, recognizing that there are two six-month periods in a year.

$1 + EAR = 1.20^2 = 1.44$
$EAR = .44$ or 44%
Your annualized return on the stock is 44%.

If MMEE is selling for $36 per share, your loss on the stock investment is –10.00%, which annualizes as follows:

$1 + EAR = .90^2 = .81$
$EAR = -.19$ or –19%

At the $48 price, your call options are worth $48 – 40 = $8 each, but now you control 7,000 shares (70 contracts), so your options are worth 7,000 shares × $8 = $56,000 total. You invested $28,000, so your dollar return is $56,000 – 28,000 = $28,000, and your percentage return is $28,000 / $28,000 = 100%, compared to 20% on the stock investment. This annualizes to:

$1 + EAR = 2.00^2 = 4.00$
$EAR = 3.00$ or 300%

However, if MMEE is selling for $36 when your options mature, then you lose everything ($28,000 investment), and your return is –100%.

19. You only get the dividend if you own the stock. The dividend would increase the return on your stock investment by the amount of the dividend yield, $.80 / $40 = .020, or 2.0%, but it would have no effect on your option investment. This question illustrates that an important difference between owning the stock and the option is that you only get the dividend if you own the stock.

20. At the $36 stock price, your put options are worth $40 – 36 = $4 each. The premium was $2.80, so you bought 100 contracts, meaning you control 10,000 shares. Your options are worth 10,00 shares × $4 = $40,000 total. You invested $28,000, so your dollar return is $40,000 – 28,000 = $12,000, and your percentage return is $12,000 / $28,000 = 42.86%. This annualizes to:

$1 + EAR = 1.4286^2 = 2.0408$
$EAR = 1.0408$, or 104.08%