CHAPTER 2: ASSET CLASSES AND FINANCIAL INSTRUMENTS

PROBLEM SETS

1. Preferred stock is like long-term debt in that it typically promises a fixed payment each year. In this way, it is a perpetuity. Preferred stock is also like long-term debt in that it does not give the holder voting rights in the firm.

    Preferred stock is like equity in that the firm is under no contractual obligation to make the preferred stock dividend payments. Failure to make payments does not set off corporate bankruptcy. With respect to the priority of claims to the assets of the firm in the event of corporate bankruptcy, preferred stock has a higher priority than common equity but a lower priority than bonds.

2. Money market securities are called "cash equivalents" because of their great liquidity. The prices of money market securities are very stable, and they can be converted to cash (i.e., sold) on very short notice and with very low transaction costs.

3. The spread will widen. Deterioration of the economy increases credit risk, that is, the likelihood of default. Investors will demand a greater premium on debt securities subject to default risk.

4. On the day we tried this experiment, 36 of the 50 stocks met this criterion, leading us to conclude that returns on stock investments can be quite volatile.

5. a. You would have to pay the asked price of:

    118:31 = 118.96875% of par = $1,189.6875

    b. The coupon rate is 11.750% implying coupon payments of $117.50 annually or, more precisely, $58.75 semiannually.

    c. Current yield = Annual coupon income/price

    = $117.50/$1,189.6875 = 0.0988 = 9.88%

6. P = $10,000/1.02 = $9,803.92

7. The total before-tax income is $4. After the 70% exclusion for preferred stock dividends, the taxable income is: $0.30 \times \$4 = \$1.20$

    Therefore, taxes are: $0.30 \times \$1.20 = \$0.36$

    After-tax income is: $\$4.00 - \$0.36 = \$3.64$

    Rate of return is: $\$3.64/\$40.00 = 9.10\%$

8. a. General Dynamics closed today at $74.59, which was $0.17 higher than yesterday's price. Yesterday's closing price was: $74.42

    b. You could buy: $\$5,000/\$74.59 = 67.03$ shares

    c. Your annual dividend income would be: $67.03 \times \$0.92 = \$61.67$

    d. The price-to-earnings ratio is 16 and the price is $74.59. Therefore:

    $$\$74.59/\text{Earnings per share} = 16 \Rightarrow \text{Earnings per share} = \$4.66$$

9. a. At t = 0, the value of the index is: $(90 + 50 + 100)/3 = 80$

    At t = 1, the value of the index is: $(95 + 45 + 110)/3 = 83.333$

    The rate of return is: $(83.333/80) - 1 = 4.17\%$

    b. In the absence of a split, Stock C would sell for 110, so the value of the index would be: $250/3 = 83.333$

    After the split, Stock C sells for 55. Therefore, we need to find the divisor (d) such that:

    $$83.333 = (95 + 45 + 55)/d \Rightarrow d = 2.340$$

    c. The return is zero. The index remains unchanged because the return for each stock separately equals zero.

10. a. Total market value at t = 0 is: $(\$9,000 + \$10,000 + \$20,000) = \$39,000$

    Total market value at t = 1 is: $(\$9,500 + \$9,000 + \$22,000) = \$40,500$

    Rate of return = $(\$40,500/\$39,000) - 1 = 3.85\%$

    b. The return on each stock is as follows:

    $$r_A = (95/90) - 1 = 0.0556$$
    $$r_B = (45/50) - 1 = -0.10$$
    $$r_C = (110/100) - 1 = 0.10$$

    The equally-weighted average is:

    $$[0.0556 + (-0.10) + 0.10]/3 = 0.0185 = 1.85\%$$

11. The after-tax yield on the corporate bonds is: $0.09 \times (1 - 0.30) = 0.0630 = 6.30\%$

    Therefore, municipals must offer at least 6.30% yields.

12. Equation (2.2) shows that the equivalent taxable yield is: $r = r_m/(1 - t)$

    a. 4.00%

    b. 4.44%

    c. 5.00%

    d. 5.71%

13. a. The higher coupon bond.

    b. The call with the lower exercise price.

    c. The put on the lower priced stock.

14. a. You bought the contract when the futures price was 1427.50 (see Figure 2.12). The contract closes at a price of 1300, which is 127.50 less than the original futures price. The contract multiplier is $250. Therefore, the loss will be:

    $$127.50 \times \$250 = \$31,875$$

    b. Open interest is 601,655 contracts.

15. a. Since the stock price exceeds the exercise price, you will exercise the call.

    The payoff on the option will be: $\$42 - \$40 = \$2$

    The option originally cost $2.14, so the profit is: $\$2.00 - \$2.14 = -\$0.14$

    Rate of return $= -\$0.14/\$2.14 = -0.0654 = -6.54\%$

    b. If the call has an exercise price of $42.50, you would not exercise for any stock price of $42.50 or less. The loss on the call would be the initial cost: $0.72

    c. Since the stock price is less than the exercise price, you will exercise the put.

    The payoff on the option will be: $\$42.50 - \$42.00 = \$0.50$

    The option originally cost $1.83 so the profit is: $\$0.50 - \$1.83 = -\$1.33$

    Rate of return $= -\$1.33/\$1.83 = -0.7268 = -72.68\%$

16. There is always a possibility that the option will be in-the-money at some time prior to expiration. Investors will pay something for this possibility of a positive payoff.

17.

	Value of call at expiration	Initial Cost	Profit
a.	0	4	-4
b.	0	4	-4
c.	0	4	-4
d.	5	4	1
e.	10	4	6

	Value of put at expiration	Initial Cost	Profit
a.	10	6	4
b.	5	6	-1
c.	0	6	-6
d.	0	6	-6
e.	0	6	-6

18. A put option conveys the *right* to sell the underlying asset at the exercise price. A short position in a futures contract carries an *obligation* to sell the underlying asset at the futures price.

19. A call option conveys the *right* to buy the underlying asset at the exercise price. A long position in a futures contract carries an *obligation* to buy the underlying asset at the futures price.

CFA PROBLEMS

1. (d)

2. The equivalent taxable yield is: $6.75\%/(1 - 0.34) = 10.23\%$

3. (a) Writing a call entails unlimited potential losses as the stock price rises.

4. a. The taxable bond. With a zero tax bracket, the after-tax yield for the taxable bond is the same as the before-tax yield (5%), which is greater than the yield on the municipal bond.

b. The taxable bond. The after-tax yield for the taxable bond is:

$$0.05 \times (1 - 0.10) = 4.5\%$$

c. You are indifferent. The after-tax yield for the taxable bond is:

$$0.05 \times (1 - 0.20) = 4.0\%$$

The after-tax yield is the same as that of the municipal bond.

d. The municipal bond offers the higher after-tax yield for investors in tax brackets above 20%.

5. If the after-tax yields are equal, then: $0.056 = 0.08 \times (1 - t)$

This implies that t = 0.30 =30%.