

## CHAPTER 2 ASSET CLASSES AND FINANCIAL INSTRUMENTS

1. Common stock is an ownership share in a publicly held corporation. Common shareholders have voting rights and may receive dividends. Preferred stock represents nonvoting shares in a corporation, usually paying a fixed stream of dividends. While corporate bonds are long-term debt issued by corporations, the bonds typically pay semi-annual coupons and return the face value of the bond at maturity.
2. While the DJIA has 30 large corporations in the index, it does not represent the overall market nearly as well as the more than 5000 stocks contained in The Wilshire index. The DJIA is simply too small.
3. Money market securities are short-term, relatively low risk, and highly liquid. Also, their unit value almost never changes.
4. The major components of the money market are Treasury bills, certificates of deposit, commercial paper, bankers' acceptances, Eurodollars, repos, reserves, federal funds, and brokers' calls.
5. American Depositary Receipts, or ADRs, are certificates traded in U.S. markets that represent ownership in shares of a foreign company. Investors may also purchase shares of foreign companies on foreign exchanges. Lastly, investors may use international mutual funds to own shares indirectly.
6. The coupons paid by municipal bonds are exempt from federal income tax and from state tax in many states. Therefore, the higher the tax bracket that the investor is in, the more valuable the tax-exempt feature to the investor.
7. The London Interbank Offer Rate (LIBOR)—a key reference rate in the money market—is the rate at which large banks in London are willing to lend money among themselves. The Fed funds rate is the rate of interest on very short-term loans among financial institutions in the U.S.
8. General obligation bonds are backed by the taxing power of the local governments, while revenue bonds have proceeds attached to specific projects. A revenue bond has fewer guarantees, it is riskier in terms of default, and, therefore, you expect it to have a higher yield.
9. Corporations may exclude 70% of dividends received from domestic corporations in the computation of their taxable income.
10. Limited liability means that the most shareholders can lose in event of the failure of the corporation is their original investment.

11. (a) A repurchase agreement is the sale of a security with a commitment to repurchase the same security at a specified future date and a designated price.

12. Money market securities are referred to as “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.

13. Equivalent taxable yield =  $\frac{\text{Rate on municipal bond}}{1 - \text{Tax rate}} = \frac{r_m}{1 - t} = \frac{.0675}{1 - 0.35} = .1038$  or 10.38%

14. After-tax yield = Rate on the taxable bond x (1 – Tax rate)

- 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 4% yield on the municipal bond.
- b. The taxable bond. The after-tax yield for the taxable bond is:  $0.05 \times (1 - 0.10) = 0.045$  or 4.50%.
- c. Neither. The after-tax yield for the taxable bond is:  $0.05 \times (1 - 0.20) = 0.04$  or 4%. The after-tax yield of taxable bond is the same as that of the municipal bond.
- d. The municipal bond. The after-tax yield for the taxable bond is:  $0.05 \times (1 - 0.30) = 0.035$  or 3.5%. The municipal bond offers the higher after-tax yield for investors in tax brackets above 20%.

15. The after-tax yield on the corporate bonds is:  $0.09 \times (1 - 0.30) = 0.063$  or 6.3%. Therefore, the municipals must offer at least 6.3% yields.

16. Using the formula of Equivalent taxable yield  $(r) = \frac{r_m}{1 - t}$ , we get:

- a.  $r = \frac{0.04}{1 - 0} = 0.04$  or 4.00%
- b.  $r = \frac{0.04}{1 - 0.10} = 0.0444$  or 4.44%
- c.  $r = \frac{0.04}{1 - 0.20} = 0.05$  or 5.00%
- d.  $r = \frac{0.04}{1 - 0.30} = 0.0571$  or 5.71%

17.

- a. You would have to pay the asked price of:  
 $121.41 = 121.41\%$  of par = \$1,214.14
- b. The coupon rate is 4.50%, implying coupon payments of \$45.00 annually or, more precisely, \$22.50(= 45.00/2) semiannually.
- c. Given the asked price and coupon rate, we can calculate current yield with the formula:

$$\text{Current yield} = \frac{\text{Annual coupon income}}{\text{Price}} = 4.50/121.41 = 0.0371 = 3.71\%$$

18.

- a. The closing price today is \$127.75, which is \$0.90 above yesterday's price. Therefore, yesterday's closing price was:  $\$127.75 - \$0.90 = \$126.85$ .
- b. You would buy 39 shares:  $\$5,000/\$127.75 = 39.14$ .
- c. Your annual dividend income on 39 shares would be  $39 \times \$2.48 = \$96.72$ .
- d. Earnings per share can be derived from the price-earnings (PE) ratio:  
 Given price/Earnings = 19.30 and Price = \$127.75, we know that Earnings per Share =  $\$127.75/19.30 = \$6.62$ .

19.

- a. At  $t = 0$ , the value of the index is:  $(\$90 + \$50 + \$100)/3 = 80$   
 At  $t = 1$ , the value of the index is:  $(\$95 + \$45 + \$110)/3 = 83.33$   
 The rate of return is:  $\frac{V_1}{V_0} - 1 = (83.33/80) - 1 = 0.0417$  or 4.17%
- b. In the absence of a split, stock C would sell for \$110, and the value of the index would be the average price of the individual stocks included in the index:  $(\$95 + \$45 + \$110)/3 = \$83.33$ .  
  
 After the split, stock C sells at \$55; however, the value of the index should not be affected by the split. We need to set the divisor (d) such that:  
 $83.33 = (\$95 + \$45 + \$55)/d$   
 $d = 2.34$
- c. The rate of return is zero. The value of the index remains unchanged since the return on each stock separately equals zero.

20.

- a. Total market value at  $t = 0$  is:

$$(\$90 \times 100) + (\$50 \times 200) + (\$200 \times 100) = \$39,000$$

Total market value at  $t = 1$  is:

$$(\$95 \times 100) + (\$45 \times 200) + (\$110 \times 100) = \$40,500$$

$$\text{Rate of return} = \frac{V_1}{V_0} - 1 = (\$40,500/\$39,000) - 1 = 0.0385 \text{ or } 3.85\%$$

- b. The return on each stock is as follows:

$$R_A = \frac{V_1}{V_0} - 1 = (\$95/\$90) - 1 = 0.0556 \text{ or } 5.56\%$$

$$R_B = \frac{V_1}{V_0} - 1 = (\$45/\$50) - 1 = -0.10 \text{ or } -10.00\%$$

$$R_C = \frac{V_1}{V_0} - 1 = (\$110/\$100) - 1 = 0.10 \text{ or } 10.00\%$$

The equally-weighted average is:  $[5.56\% + (-10.00\%) + 10.00\%]/3 = 1.85\%$

21. The fund would require constant readjustment since every change in the price of a stock would bring the fund asset allocation out of balance.

22. In this case, the value of the divisor will increase by an amount necessary to maintain the index value on the day of the change. For example, if the index was comprised of only one stock, it would increase by 2.06 points:  $(\$180 - \$34) / \$34 = 4.29$ .

23. Bank discount of 87 days:  $0.034 \times \frac{87 \text{ days}}{360 \text{ days}} = 0.008217$

- a. Price:  $\$10,000 \times (1 - 0.008217) = \$9,917.83$

- b. Bond equivalent yield =  $\frac{\text{Face value} - \text{Purchase price}}{\text{Purchase price} \times T}$

$$= \frac{\$10,000 - \$9,917.83}{\$9,917.83 \times \frac{87 \text{ days}}{365 \text{ days}}} = 0.0348 \text{ or } 3.48\%$$

24.

- a. The higher coupon bond: The 10-year T-bond with a 10% coupon  
 b. The call with the lower exercise price: The call with the exercise price of \$35  
 c. The put option on the lower priced stock: The put on the stock selling at \$50

25.

- a. The December maturity futures price is \$3.88 per bushel. If the contract closes at \$3.95 per bushel in December, your profit / loss on each contract (for delivery of 5,000 bushels of corn) will be:  $(\$3.95 - \$3.88) \times 5000 = \$337.50$  gain.
- b. There are 99,741 contracts outstanding, representing 498,705,000 bushels of corn.

26.

- a. Yes. As long as the stock price at expiration exceeds the exercise price, it makes sense to exercise the call.  
 Gross profit is:  $(\$102 - \$100) \times 100 \text{ shares} = \$200$   
 Net profit =  $(\$2 - \$2.62) \times 100 \text{ shares} = \$62$  loss  
 Rate of return =  $-\$0.62 / \$2.62 = -0.2366$  or 23.66% loss
- b. Yes, exercise.  
 Gross profit is:  $(\$102 - \$95) \times 100 \text{ shares} = \$700$   
 Net profit =  $(\$7 - \$6.35) \times 100 \text{ shares} = \$65$  gain  
 Rate of return =  $\$65 / \$6.35 = 0.1024$  or 10.24 % gain
- c. A put with an exercise price of \$100 would expire worthless for any stock price equal to or greater than \$100. An investment in such a put would have a rate of return over the holding period of -100%.

27.

- a. Long call
- b. Long put
- c. Short put
- d. Short call

28. There is always a chance that the option will expire in the money. Investors will pay something for this chance of a positive payoff.

29. Long call for \$4:

	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

Long put for \$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

30. 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.
31. Six stocks have a 52-week high at least 40% above the 52-week low. It can be concluded that individual stocks are much more volatile than a group of stocks.

52-wk high	52-wk low	Price ratio (High-Low)/Low
46.84	36.13	0.30
76.82	56.57	0.36
32.44	14.02	1.31
37.39	25.5	0.47
69.87	45.27	0.54
14.07	12.12	0.16
19.77	15.01	0.32
62.5	39.01	0.60
34.61	20.21	0.71
128.34	83.61	0.53
28.09	23.5	0.20

32. The total before-tax income is \$4. The corporations may exclude 70% of dividends received from domestic corporations in the computation of their taxable income; the taxable income is therefore:  $\$4 \times 30\% = \$1.20$ .  
 Income tax in the 30% tax bracket:  $\$1.2 \times 30\% = \$0.36$   
 After-tax income =  $\$4 - \$0.36 = \$3.64$   
 After-tax rate of return =  $\$3.64/\$40 = 0.091$  or 9.10%
33. 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.
34. 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.

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Answer: c. Taxation