

Problem Sets

KAPLAN
SCHWESER

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Basic

1. In what ways is preferred stock like long-term debt? In what ways is it like equity?
2. Why are money market securities sometimes referred to as "cash equivalents"?
3. Which of the following **correctly** describes a repurchase agreement?
 - a. The sale of a security with a commitment to repurchase the same security at a specified future date and a designated price.
 - b. The sale of a security with a commitment to repurchase the same security at a future date less unspecified, at a designated price.
 - c. The purchase of a security with a commitment to purchase more of the same security at a specified future date.
4. What would you expect to happen to the spread between yields on commercial paper and Treasury bills if the economy were to enter a steep recession?
5. What are the key differences between common stock, preferred stock, and corporate bonds?
6. Why are high-tax-bracket investors more inclined to invest in municipal bonds than low-bracket investors?

Intermediate

7. Turn back to Figure 2.3 and look at the Treasury bond maturing in February 2039.
 - a. How much would you have to pay to purchase one of these notes?
 - b. What is its coupon rate?
 - c. What is the current yield of the note?
8. Suppose investors can earn a return of 2% per 6 months on a Treasury note with 6 months remaining until maturity. What price would you expect a 6-month maturity Treasury bill to sell for?
9. Find the after-tax return to a corporation that buys a share of preferred stock at \$40, sells it at year-end at \$40, and receives a \$4 year-end dividend. The firm is in the 30% tax bracket.
10. Turn to Figure 2.6 and look at the listing for General Dynamics.
 - a. How many shares could you buy for \$5,000?
 - b. What would be your annual dividend income from those shares?
 - c. What must be General Dynamics earnings per share?
 - d. What was the firm's closing price on the day before the listing?
11. Consider the three stocks in the following table. P_t represents price at time t , and Q_t represents shares outstanding at time t . Stock C splits two for one in the last period.

	P_0	Q_0	P_1	Q_1	P_2	Q_2
A	90	100	95	100	95	100
B	50	200	45	200	45	200
C	100	200	110	200	55	400

- a. Calculate the rate of return on a price-weighted index of the three stocks for the first period ($t = 0$ to $t = 1$).
 - b. What must happen to the divisor for the price-weighted index in year 2?
 - c. Calculate the rate of return for the second period ($t = 1$ to $t = 2$).
12. Using the data in the previous problem, calculate the first-period rates of return on the following indexes of the three stocks:
 - a. A market-value-weighted index.
 - b. An equally weighted index.

13. An investor is in a 30% tax bracket. If corporate bonds offer 9% yields, what must municipals offer for the investor to prefer them to corporate bonds?
14. Find the equivalent taxable yield of a short-term municipal bond currently offering yields of 4% for tax brackets of zero, 10%, 20%, and 30%.
15. What problems would confront a mutual fund trying to create an index fund tied to an equally weighted index of a broad stock market?
16. Which security should sell at a greater price?
 - a. A 10-year Treasury bond with a 9% coupon rate versus a 10-year T-bond with a 10% coupon.
 - b. A 3-month expiration call option with an exercise price of \$40 versus a 3-month call on the same stock with an exercise price of \$35.
 - c. A put option on a stock selling at \$50, or a put option on another stock selling at \$60 (all other relevant features of the stocks and options may be assumed to be identical).
17. Look at the futures listings for the corn contract in Figure 2.8.
 - a. Suppose you buy one contract for March delivery. If the contract closes in March at a level of 3.875, what will your profit be?
 - b. How many March maturity contracts are outstanding?
18. Turn back to Figure 2.7 and look at the Intel options. Suppose you buy a November expiration call option with exercise price \$21.
 - a. Suppose the stock price in November is \$21.75. Will you exercise your call? What is the profit on your position?
 - b. What if you had bought the November call with exercise price \$22?
 - c. What if you had bought a November put with exercise price \$22?
19. Why do call options with exercise prices greater than the price of the underlying stock sell for positive prices?
20. Both a call and a put currently are traded on stock XYZ; both have strike prices of \$50 and expirations of 6 months. What will be the profit to an investor who buys the call for \$4 in the following scenarios for stock prices in 6 months? What will be the profit in each scenario to an investor who buys the put for \$6?

a. \$40	c. \$50	e. \$60
b. \$45	d. \$55	

Challenge

21. Explain the difference between a put option and a short position in a futures contract.
 22. Explain the difference between a call option and a long position in a futures contract.
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1. A firm's preferred stock often sells at yields below its bonds because
 - a. Preferred stock generally carries a higher agency rating.
 - b. Owners of preferred stock have a prior claim on the firm's earnings.
 - c. Owners of preferred stock have a prior claim on a firm's assets in the event of liquidation.
 - d. Corporations owning stock may exclude from income taxes most of the dividend income they receive.
 2. A municipal bond carries a coupon of $6\frac{3}{4}\%$ and is trading at par. What is the equivalent taxable yield to a taxpayer in a combined federal plus state 34% tax bracket?
 3. Which is the *most risky* transaction to undertake in the stock index option markets if the stock market is expected to increase substantially after the transaction is completed?
 - a. Write a call option.
 - b. Write a put option.
 - c. Buy a call option.
 - d. Buy a put option.

4. Short-term municipal bonds currently offer yields of 4%, while comparable taxable bonds pay 5%. Which gives you the higher after-tax yield if your tax bracket is:
 - a. Zero
 - b. 10%
 - c. 20%
 - d. 30%
5. The coupon rate on a tax-exempt bond is 5.6%, and the rate on a taxable bond is 8%. Both bonds sell at par. At what tax bracket (marginal tax rate) would an investor be indifferent between the two bonds?

E-Investments Exercises

Inflation-Protected Bonds around the World

Barclays maintains a Web site at www.barcap.com with information about inflation around the world and tools to help issuers and investors understand the inflation-linked asset class. Inflation-linked bonds were issued by a number of countries after 1945, including Israel, Argentina, Brazil, and Iceland. However, the modern market is generally deemed to have been born in 1981, when the first index-linked gilts were issued in the U.K. The other large markets adopted somewhat different calculations to those used by the U.K., mostly copying the more straightforward model first employed by Canada in 1991. In chronological order, the markets are the U.K. (1981), Australia (1985), Canada (1991), Sweden (1994), the United States (1997), France (1998), Italy (2003), and Japan (2004).

Solutions to CONCEPT CHECK

1. The bond sells for 98:26 bid which is a price of 98.813% of par, or \$988.13, and 98:29 ask, or \$989.06. This ask price corresponds to a yield of 4.3156%. The ask price fell $\frac{20}{32}$ from its level yesterday, so the ask price then must have been 99:17, or \$995.31.
2. A 6% taxable return is equivalent to an after-tax return of $6(1 - .30) = 4.2\%$. Therefore, you would be better off in the taxable bond. The equivalent taxable yield of the tax-free bond is $4/(1 - .30) = 5.71\%$. So a taxable bond would have to pay a 5.71% yield to provide the same after-tax return as a tax-free bond offering a 4% yield.
3. a. You are entitled to a prorated share of IBM's dividend payments and to vote in any of IBM's stockholder meetings.
b. Your potential gain is unlimited because IBM's stock price has no upper bound.
c. Your outlay was $\$80 \times 100 = \$8,000$. Because of limited liability, this is the most you can lose.
4. The price-weighted index increases from 62.5 [i.e., $(100 + 25)/2$] to 65 [i.e., $(110 + 20)/2$], a gain of 4%. An investment of one share in each company requires an outlay of \$125 that would increase in value to \$130, for a return of 4% (i.e., $5/125$), which equals the return to the price-weighted index.
5. The market-value-weighted index return is calculated by computing the increase in the value of the stock portfolio. The portfolio of the two stocks starts with an initial value of \$100 million + \$500 million = \$600 million and falls in value to \$110 million + \$400 million = \$510 million, a loss of $90/600 = .15$, or 15%. The index portfolio return is a weighted average of the returns on each stock with weights of $\frac{1}{6}$ on XYZ and $\frac{5}{6}$ on ABC (weights proportional to relative investments). Because the return on XYZ is 10%, while that on ABC is -20%, the index portfolio return is $\frac{1}{6} \times 10\% + \frac{5}{6} \times (-20\%) = -15\%$, equal to the return on the market-value-weighted index.
6. The payoff to the call option is \$2 per share at expiration. The option cost is \$1.66 per share. The dollar profit is therefore \$.34. The put option expires worthless. Therefore, the investor's loss is the cost of the put, or \$.98.