

Textbook review problems:

These references are for the **13th edition** of our textbook (*Investments* by Bodie, Kane, and Marcus).

Chapter 2:

Example 2.4 and Concept Check 2.5 (page 51)

Problems at the end of the chapter: 12 and 16.

Chapter 4:

Example 4.1 and Concept Check 4.1 (page 100).

Example 4.3 (page 109).

Problems at the end of the chapter: 3, 5, 6, 9, 11-13, 15, and 20.

Chapter 18:

Problems at the end of the chapter: 5, 6, 8, and 11(a).

The textbook gives answers to the “Examples” when it presents them, and solutions to the “Concept Checks” at the end of each chapter. The solutions below are for the problems at the end of the chapters.

Solutions to the above problems

Chapter 2:

12. 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:

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

16. Turnover rates will tend to be higher, as an EWI must be rebalanced back to its original target. By design, many of the transactions would be among the smaller, less-liquid stocks.

Chapter 4:

3. Open-end funds are obligated to redeem investor's shares at net asset value and thus must keep cash or cash-equivalent securities on hand in order to meet potential redemptions. Closed-end funds do not need the cash reserves because there are no redemptions for closed-end funds. Investors in closed-end funds sell their shares when they wish to cash out.
5. Unlike an open-end fund, in which underlying shares are redeemed when the fund is redeemed, a closed-end fund trades as a security in the market. Thus, their prices may differ from the NAV.

6. Advantage of an ETF: Investors can directly buy and sell shares on an exchange, which has several benefits compared to a mutual fund: Liquidity throughout the day, transparency of the price that you get for buying and selling, less need for marketing the fund.

(There are also other benefits that are not testable for class: flexibility of realizing capital gains for tax purposes, and stability when holding illiquid underlying assets.)

Advantage of a mutual fund: As long as the fund is stable, it guarantees to investors that they can buy and sell shares at exactly the fund's NAV. This is not a big issue for ETFs with liquid holdings (like stocks) but can be a bigger concern for funds with illiquid holdings (like bonds).

9. Stock Value Held by Fund

A	\$ 7,000,000
B	12,000,000
C	8,000,000
D	<u>15,000,000</u>
Total	\$42,000,000

$$\text{Net asset value} = \frac{\$42,000,000 - \$30,000}{4,000,000} = \$10.49$$

11. a. $\text{NAV} = \frac{\$200,000,000 - \$3,000,000}{5,000,000} = \39.40

b. $\text{Premium (or discount)} = \frac{\text{Price} - \text{NAV}}{\text{NAV}} = \frac{\$36 - \$39.40}{\$39.40} = -0.086, \text{ or } -8.6\%$

The fund sells at an 8.6% discount from NAV.

12. $\frac{\text{NAV}_1 - \text{NAV}_0 + \text{Distributions}}{\text{NAV}_0} = \frac{\$12.10 - \$12.50 + \$1.50}{\$12.50} = 0.088, \text{ or } 8.8\%$

13. a. Start-of-year price: $P_0 = \$12.00 \times 1.02 = \12.24

End-of-year price: $P_1 = \$12.10 \times 0.93 = \11.25

Although NAV increased by \$0.10, the price of the fund decreased by \$0.99.

$$\text{Rate of return} = \frac{P_1 - P_0 + \text{Distributions}}{P_0} = \frac{\$11.25 - \$12.24 + \$1.50}{\$12.24} = 0.042, \text{ or } 4.2\%$$

- b. An investor holding the same securities as the fund manager would have earned a rate of return based on the increase in the NAV of the portfolio:

$$\frac{\text{NAV}_1 - \text{NAV}_0 + \text{Distributions}}{\text{NAV}_0} = \frac{\$12.10 - \$12.00 + \$1.50}{\$12.00} = 0.133, \text{ or } 13.3\%$$

15. $\text{NAV}_0 = \$200,000,000 / 10,000,000 = \20

Dividends per share = $\$2,000,000 / 10,000,000 = \0.20

NAV₁ is based on the 8% price gain, less the 1% 12b-1 fee:

$$\text{NAV}_1 = \$20 \times 1.08 \times (1 - 0.01) = \$21.384$$

$$\text{Rate of return} = \frac{\$21.384 - \$20 + \$0.20}{\$20} = 0.0792, \text{ or } 7.92\%$$

20. a. $\frac{\$450,000,000 - \$10,000,000}{44,000,000} = \10

b. Outstanding shares fall to 43 million. If no capital gains are realized, the NAV drops to \$10. In reality, the redemption of 1 million shares will most likely force the fund to sell securities, realize capital gains, and owe taxes on those gains. This will lower the remaining portfolio by an amount greater than \$10,000,000, implying a remaining total value less than \$440,000,000, and then the NAV will fall below \$10.

Chapter 18:

Note: In #5, 6, and 11 below, the textbook says that a stock “currently pays” a given dividend amount. More precisely what it means is that this was the *most recent* dividend. This means that to get the *upcoming* dividend for the next year, you should grow the dividend that they gave you one time.

5. 9%.

6. 8%.

8. a. 12%
b. \$18.18

c. The price falls in response to the more pessimistic dividend forecast. The forecast for *current* year earnings, however, is unchanged. Therefore, the P/E ratio falls. The lower P/E ratio is evidence of the diminished optimism concerning the firm's growth prospects.

14(a). \$160