

Essentials of Investments (BKM 7th Ed.)
Answers to Suggested Problems – Lecture 1

Chapter 2:

8.

- a. At $t = 0$, the value of the index is: $(90 + 50 + 100)/3 = 80$
At $t = 1$, the value of the index is: $(95 + 45 + 110)/3 = 83.3333$
The rate of return is: $(83.3333/80) - 1 = 4.167\%$

- b. In the absence of a split, stock C would sell for 110, and the value of the index would be: $(95 + 45 + 110)/3 = 83.3333$

After the split, stock C sells at 55. Therefore, we need to set the divisor (D) such that:

$$83.3333 = (95 + 45 + 55)/D \quad \text{or} \quad D = 2.340$$

- c. The rate of return is zero. The index remains unchanged, as it should, since the return on each stock equals zero.

9.

- a. Total market value at $t = 0$ is: $(9,000 + 10,000 + 20,000) = 39,000$
Total market value at $t = 1$ is: $(9,500 + 9,000 + 22,000) = 40,500$

The return on the value-weighted index equals:

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

- 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 return on the equally-weighted index equals:

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

10. The after-tax yield on the corporate bonds is: $[0.09 \times (1 - 0.30)] = 0.0630 = 6.30\%$
Therefore, municipal bonds must offer a yield of at least 6.30%.

12. The equivalent taxable yield (r) is: $r = r_m/(1 - t)$

- a. 4.00%
b. 4.44%
c. 5.00%
d. 5.71%

Chapter 3:

1.

- a. The underwriter charges a gross spread of 7% (and there are no other fees listed). The total fees are therefore $1,000,000 \times \$50 \times 7\% = \3.5 million.
- b. The firm raised \$50 per share less the gross spread, or:
 $1,000,000 \times \$50 \times (1-0.07) = \46.5 million.
- c. The underpricing is \$3 per share, or $(53-50)/50 = 6.0\%$.
- d. The firm paid \$3.5 million in explicit fees to the underwriter. The implicit cost associated with underpricing was \$3 per share. The total explicit and implicit costs were therefore $\$3.5$ million + $(1,000,000 \times \$3) = \6.5 million.

7.

- a. You buy 200 shares of Telecom (\$10,000/\$50 per share). These shares increase in value by 10%, or \$1,000. You pay interest of: $0.08 \times 5,000 = \$400$

The rate of return will be:

$$\frac{\$1,000 - \$400}{\$5,000} = 0.12 = 12\%$$

- b. The value of the 200 shares is $200P$. The equity in the account is $(200P - \$5,000)$. You will receive a margin call when:

$$\frac{200P - \$5,000}{200P} = 0.30 \quad \text{when } P = \$35.71 \text{ or lower}$$

- c. The value of the 200 shares is $200P$. After one year, the equity in the account is $(200P - \$5,000(1.08))$. You will receive a margin call when:

$$\frac{200P - \$5,000(1.08)}{200P} = 0.30 \quad \text{when } P = \$38.57 \text{ or lower}$$

8.

- a. Initial margin is 50% of \$30,000 or \$15,000.
- b. Total assets are \$45,000 (\$30,000 from the sale of the stock and \$15,000 put up for margin). Liabilities are $500P$ because you must pay back the borrowed shares. The equity in the account is $(\$45,000 - 500P)$. A margin call will be issued when:

$$\frac{\$45,000 - 500P}{500P} = 0.30 \quad \text{when } P = \$69.23 \text{ or higher}$$

18. The proceeds from the short sale (net of commission) were:
 $(\$14 \times 100) - (\$0.50 \times 100) = \$1,350$

You must repay the dividend to the original owner of the borrowed shares. As a result, the dividend payment of \$200 is withdrawn from your account.

Covering the short sale at \$9 per share cost you (including commission):
 $(\$9 \times 100) + (\$0.50 \times 100) = \$950$

Therefore, the value of your account is equal to the net profit on the transaction:
 $\$1350 - \$200 - \$950 = \200

Note that your profit (\$200) equals (100 shares x profit per share of \$2). Your net proceeds per share were:

\$14	selling price of stock
-\$ 9	repurchase price of stock
-\$ 2	dividend per share
<u>-\$ 1</u>	2 trades x \$0.50 commission per share
\$ 2	

19. d. If the stock never traded at or below \$55, your stop loss order would never be executed. In this case, your stop loss order would trigger a market sell order as soon as a transaction occurs at or below \$55. After this transaction occurs, your broker will sell your shares at the best available market price. This price should be close to \$55, but could be slightly above or below this price.

Chapter 4:

13. Start of year NAV = \$20

Dividends per share = \$0.20

End of year NAV is based on the 8% price gain, less the 1% 12b-1 fee:

End of year NAV = $\$20 \times 1.08 \times (1 - 0.01) = \21.384

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

19.

- a. After two years, each dollar invested in a fund with a 4% load and a portfolio return equal to r will grow to:

$$\$0.96 \times (1 + r - 0.005)^2$$

Each dollar invested in the bank CD will grow to:

$$\$1 \times (1.06)^2$$

If the mutual fund is to be the better investment, then the portfolio return, r , must satisfy:

$$0.96 \times (1 + r - 0.005)^2 > (1.06)^2$$

$$0.96 \times (1 + r - 0.005)^2 > 1.1236$$

$$(1 + r - 0.005)^2 > 1.1704$$

$$(1 + r - 0.005) > 1.0819$$

$$1 + r > 1.0869$$

Therefore, $r > 0.0869 = 8.69\%$

- b. If you invest for six years, then the portfolio return must satisfy:

$$0.96 \times (1 + r - 0.005)^6 > (1.06)^6 = 1.4185$$

$$(1 + r - 0.005)^6 > 1.4776$$

$$1 + r - 0.005 > 1.0672$$

$$1 + r > 1.0722$$

$$r > 7.22\%$$

The cutoff rate of return is lower for the six year investment because the "fixed cost" (i.e., the one-time front-end load) is spread out over a greater number of years.

- c. With a 12b-1 fee instead of a front-end load, the portfolio must earn a rate of return (r) that satisfies:

$$(1 + r - 0.005 - 0.0075) > 1.06$$

In this case, r must exceed 7.25% regardless of the investment horizon.

20. The turnover rate is 50%. This means that, on average, 50% of the portfolio is sold and replaced with other securities each year. Trading costs on the sell orders are 0.4%; and the buy orders to replace those securities entail another 0.4% in trading costs. Total trading costs will reduce portfolio returns by: $2 \times 0.4\% \times 0.50 = 0.4\%$