Student Solutions Manual

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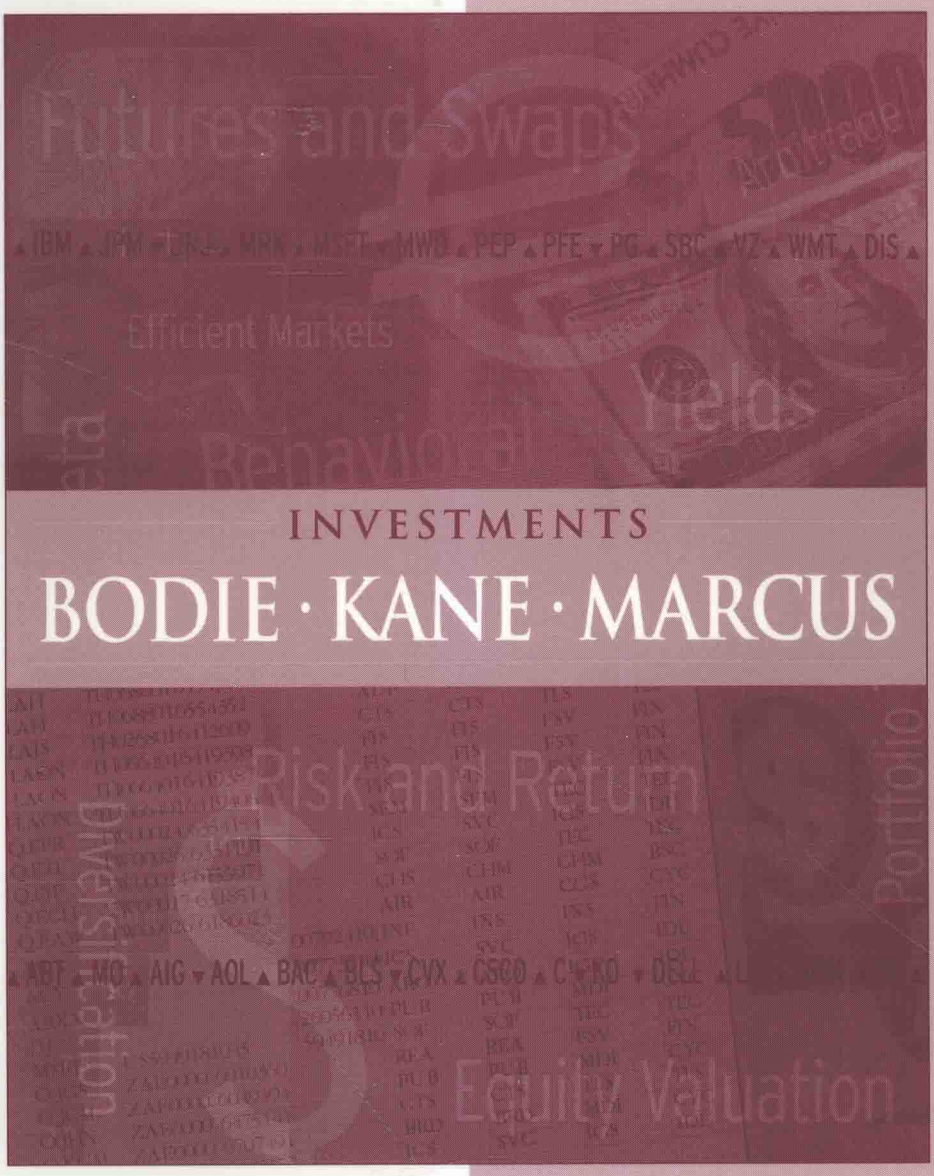

INVESTMENTS

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Prepared by
Bruce Swensen

Student Solutions Manual

for use with

Investments

Sixth Edition

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CHAPTER 1: THE INVESTMENT ENVIRONMENT

1. a. Cash is a financial asset because it is the liability of the federal government.

   b. No. The cash does not directly add to the productive capacity of the economy.

   c. Yes.

   d. If the economy is already operating at full capacity, and you now command the additional purchasing power provided by the $10 billion, then your increased ability to purchase goods must be offset by a decrease in the ability of others to purchase goods. Thus, the other individuals in the economy can be made worse off by your discovery.

2. a. The bank loan is a financial liability for Lanni. (Lanni's IOU is the bank's financial asset). The cash Lanni receives is a financial asset. The new financial asset created is Lanni's promissory note (that is, Lanni's IOU to the bank).

   b. Lanni transfers financial assets (cash) to the software developers. In return, Lanni gets a real asset, the completed software. No financial assets are created or destroyed; cash is simply transferred from one party to another.

   c. Lanni gives the real asset (the software) to Microsoft in exchange for a financial asset, 1,500 shares of stock in Microsoft. If Microsoft issues new shares in order to pay Lanni, then this would represent the creation of new financial assets.

   d. Lanni exchanges one financial asset (1,500 shares of stock) for another ($120,000). Lanni gives a financial asset ($50,000 cash) to the bank and gets back another financial asset (its IOU). The loan is "destroyed" in the transaction, since it is retired when paid off and no longer exists.

3. a.

Assets		*Liabilities & Shareholders' equity*	
Cash	$ 70,000	Bank loan	$ 50,000
Computers	30,000	Shareholders' equity	50,000
Total	$100,000	Total	$100,000

Ratio of real to total assets = $30,000/$100,000 = 0.30

b.

Assets		*Liabilities & Shareholders' equity*	
Software product*	$ 70,000	Bank loan	$ 50,000
Computers	30,000	Shareholders' equity	50,000
Total	$100,000	Total	$100,000

*Valued at cost

Ratio of real to total assets = $100,000/$100,000 = 1.0

c.

Assets		*Liabilities & Shareholders' equity*	
Microsoft shares	$120,000	Bank loan	$ 50,000
Computers	30,000	Shareholders' equity	100,000
Total	$150,000	Total	$150,000

Ratio of real to total assets = $30,000/$150,000 = 0.20

Conclusion: when the firm starts up and raises working capital, it will be characterized by a low ratio of real to total assets. When it is in full production, it will have a high ratio of real assets. When the project "shuts down" and the firm sells it off for cash, financial assets once again replace real assets.

4. For financial institutions, the ratio is: 628/17,252 = 0.036
For non-financial institutions, the ratio is: 9,166/18,271 = 0.502
The difference should be expected primarily because the bulk of the business of financial institutions is to make loans, which are financial assets for the financial institutions.

5. The tax increased the relative attractiveness of Eurobonds compared to dollar-denominated bonds issued in the U.S., thus contributing to the growth of the Eurobond market. This provides a lesson on the potential efficacy (or lack thereof) of financial regulations in global markets where market participants can direct trades across national boundaries.

6. a. A fixed salary means that compensation is (at least in the short run) independent of the firm's success. This salary structure does not tie the manager's immediate compensation to the success of the firm. However, the manager might view this as the safest compensation structure and therefore value it more highly.

b. A salary that is paid in the form of stock in the firm means that the manager earns the most when the shareholders' wealth is maximized. This structure is therefore most likely to align the interests of managers and shareholders. If stock compensation is overdone, however, the manager might view it as overly risky since the manager's career is already linked to the firm, and this undiversified exposure would be exacerbated with a large stock position in the firm.

c. Call options on shares of the firm create great incentives for managers to contribute to the firm's success. In some cases, however, stock options can lead to other agency problems. For example, a manager with numerous call options might be tempted to take on a very risky investment project, reasoning that if the project succeeds the payoff will be huge, while if it fails, the losses are limited to the lost value of the options. Shareholders, in contrast, bear the losses as well as the gains on the project, and might be less willing to assume that risk.

7. Even if an individual shareholder could monitor and improve managers' performance, and thereby increase the value of the firm, the payoff would be small, since the ownership share in a large corporation would be very small. For example, if you own $10,000 of GM stock and can increase the value of the firm by 5%, a very ambitious goal, you benefit by only $(0.05 \times \$10{,}000) = \$500$.

In contrast, a bank that has a multimillion-dollar loan outstanding to the firm has a big stake in making sure that the firm can repay the loan. It is clearly worthwhile for the bank to spend considerable resources to monitor the firm.

8. a. Primary-market transaction

b. If we consider gold bullion to be the primitive asset, then the certificate, which is a claim to gold, is a derivative asset. The value of the certificate depends on the value of the primitive asset.

c. Investors who wish to own gold without the complication and cost of physical storage.

9. Securitization requires access to a large number of potential investors. To attract these investors, the capital market needs:
(1) a safe system of business laws, and low probability of confiscatory taxation/regulation;
(2) a well-developed investment banking industry;
(3) a well-developed system of brokerage and financial transactions, and;
(4) well-developed information systems, particularly for financial reporting.
These characteristics are found in (indeed make for) a well-developed financial market.

10. a. No. Diversification calls for investing your savings in assets that do well when GM is doing poorly.

    b. No. Although Toyota is a competitor of GM, both are subject to fluctuations in the automobile market.

11. Unlike fixed salary contracts, bonuses create better incentives for executives to enhance the performance of the firm.

12. Securitization leads to disintermediation; that is, securitization provides a means for market participants to bypass intermediaries. For example, mortgage-backed securities channel funds to the housing market without requiring that banks or thrift institutions make loans from their own portfolios. As securitization progresses, financial intermediaries must increase other activities such as providing short-term liquidity to consumers and small business, and financial services.

13. The REIT manager pools the resources of many investors and uses these resources to buy a portfolio of real estate assets. Each investor in the REIT owns a fraction of the total portfolio, in accordance with the size of the individual investment. The REIT gives the investor the ability to hold a diversified portfolio of real estate assets. Moreover, the investor has the ability to buy and sell shares of the REIT far more easily and cheaply than the underlying real estate itself could be bought or sold. Investors are willing to pay the manager of a REIT a reasonable management fee in return for these benefits. Therefore, the profit motive will lead qualified firms to organize and sell REITs.

14. Ultimately, real assets do determine the material well-being of an economy. Nevertheless, individuals can benefit when financial engineering creates new products that allow investors to manage their portfolios of financial assets more efficiently. Because bundling and unbundling creates financial products with new properties and differing sensitivities to various sources of risk, financial engineering allows investors to allocate and hedge particular sources of risk more efficiently.

15. Financial assets make it easy for large firms to raise capital to finance their investments in real assets. If General Motors, for example, could not issue stocks or bonds to the general public, it would have a far more difficult time raising capital. Contraction of the supply of financial assets would make financing more difficult, increasing the cost of capital. A higher cost of capital means less investment and lower real growth.

16. In 19th-century America, with its largely agrarian economy, uncertainty in crop yields and prices was a major source of economy-wide risk. Therefore, there was a great incentive to create mechanisms to allow both producers and purchasers of agricultural commodities to hedge this risk. In contrast, the uncertainty of paper or pencil prices was far smaller, and the need to hedge against such risk was minimal. There would be no demand for trading in securities that would allow investors to transfer risk in the prices of these goods.

CHAPTER 2: FINANCIAL INSTRUMENTS

1. (d)

2. (b) [6.75%/(1 – 0.34) = 10.2%]

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

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

   112:05 = 112.15625% of par = $1,121.5625

   b. The coupon rate is 5.625% implying coupon payments of $56.25 annually or, more precisely, $28.125 semiannually.

   c. Current yield = (Annual coupon income/price)

   = $56.25/$1,121.5625 = 0.0502 = 5.02%

5. 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.

6. 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.

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

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

   Therefore, taxes are: 0.30 × $1.20 = $0.36

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

   Rate of return is: $3.64/$40.00 = 9.1%

9. a. General Mills closed today at \$47.50, which was \$0.15 lower than yesterday's price. Yesterday's price was: \$47.65

b. You could buy: \$5,000/\$47.65 = 104.9 shares

c. Your annual dividend income would be: $104.9 \times \$1.10 = \$115.39$

d. The price-to-earnings ratio is 30 and the price is \$47.50. Therefore:

\$47.50/Earnings per share = 30 $\Rightarrow$ Earnings per share = \$1.58

10. 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.

11. 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%

12. 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.

13. 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%.

14. Equation (2.5) shows that the equivalent taxable yield is: $r = r_m/(1 - t)$

    a. 4.00%

    b. 4.44%

    c. 5.00%

    d. 5.71%

15. If the after-tax yields are equal, then: $0.056 = 0.08 \times (1 - t)$
    This implies that $t = 0.30$, so the correct choice is (a).

16. a. The higher coupon bond.

    b. The call with the lower exercise price.

    c. The put on the lower priced stock.

17. a. You bought the contract when the futures price was 392.25 (see Figure 2.12). The contract closes at a price of 430, which is 37.75 higher than the original futures price. The contract multiplier is \$500. Therefore, the profit will be:

    $$37.75 \times \$500 = \$18,875$$

    b. Open interest is 25,391 contracts.

18. a. Since the stock price exceeds the exercise price, you will exercise the call.
The payoff on the option will be: $24.50 – $22.50 = $2
The option originally cost $1.85, so the profit is: $2.00 – $1.85 = $0.15

b. If the exercise price were $25, you would not exercise. The loss on the call would be the initial cost, $0.60.

c. If the put has an exercise price of $22.50, you would not exercise for any stock price of $22.50 or above. The loss on the put would be the initial cost, $0.55.

19. 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.

20.

	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

21. 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.

22. 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.

23. 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.

24. On the day we tried this experiment, 18 of the 25 stocks met this criterion, leading us to conclude that returns on stock investments can be quite volatile.

CHAPTER 3: HOW SECURITIES ARE TRADED

1. a. In addition to the explicit fees of $70,000, FBN appears to have paid an implicit price in underpricing of the IPO. The underpricing is $3 per share, or a total of $300,000, implying total costs of $370,000.

   b. No. The underwriters do not capture the part of the costs corresponding to the underpricing. The underpricing may be a rational marketing strategy. Without it, the underwriters would need to spend more resources in order to place the issue with the public. The underwriters would then need to charge higher explicit fees to the issuing firm. The issuing firm may be just as well off paying the implicit issuance cost represented by the underpricing.

2. a. In principle, potential losses are unbounded, growing directly with increases in the price of IBX.

   b. If the stop-buy order can be filled at $78, the maximum possible loss per share is $8. If the price of IBX shares goes above $78, then the stop-buy order would be executed, limiting the losses from the short sale.

3. a. The stock is purchased for: (300 × $40) = $12,000
   The amount borrowed is $4,000. Therefore, the investor put up equity, or margin, of $8,000.

   b. If the share price falls to $30, then the value of the stock falls to $9,000. By the end of the year, the amount of the loan owed to the broker grows to:

   ($4,000 × 1.08) = $4,320.

   Therefore, the remaining margin in the investor's account is:

   ($9,000 – $4,320) = $4,680.

   The percentage margin is now: ($4,680/$9,000) = 0.52 = 52%.

   Therefore, the investor will not receive a margin call.

   c. The rate of return on the investment over the year is:

   (Ending equity in the account – Initial equity)/Initial equity

   = ($4,680 – $8,000)/$8,000 = –0.415 = –41.5%