

**Solution Manual for Investments An Introduction
12th**

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**CHAPTER 2
SECURITIES MARKETS**

Teaching Guides for Questions and Problems in the Text

QUESTIONS

2-1. a. Listed securities are traded through a formal exchange such as the New York Stock Exchange. The securities of unlisted firms are traded over-the-counter market (e.g., the Nasdaq stock market). There is also an OTC market for smaller and less actively traded stocks (such as the "pink sheets"). The investor may obtain quotes and executions as rapidly for Nasdaq and other OTC stocks as for listed securities.

b. Market makers (i.e., securities dealers) offer to buy and sell securities at prices they quote (i.e., the bid and ask). They maintain markets in securities (stocks or bonds). Their sources of profit are (1) the difference between the price at which they buy and the price at which they sell (i.e., the spread between the bid and ask), (2) interest and dividend income received on the inventory of securities they own, and (3) price appreciation in the value of their inventory of securities.

Brokers are agents who buy and sell securities for their customers' accounts. Brokers earn income through commissions from executing transactions.

c. Full-service broker firms offer more services such as financial planning while discount and electronic brokerage

firms' primary role is to execute trades. The commissions charged by full-service brokerage firms are perceptibly higher than those charged by discount and electronic brokerage firms.

d. The primary market is the initial sale of a security such as the "initial public offering" of a stock. Proceeds of the sales go to the firm issuing the security. All subsequent transactions are in the secondary market in which proceeds flow from the buyer to the seller.

e. A market order is an order to buy or sell at the current price. In many cases that order will be executed at the current bid or ask prices. However, the instructor should point out that prices can and do change rapidly, and could change between the time the market order is given and executed. In addition, the investor may not be able to buy or sell the entire order at the current bid or ask price.

A good-till-canceled order is a buy or sell order at a specific price. It remains in effect until it is either executed or canceled. Since the price of the stock may never reach the specified price, there is no assurance the order will be executed.

f. With a cash account, all transactions are settled with the buyer's funds. The buyer pays the full price of the security plus the commissions. With a margin account, the investor may borrow some of the funds necessary to pay for the security purchase (i.e., buying securities with an initial cash payment plus borrowed funds). The instructor should point out that having a margin account does not require that the investor use margin and borrow part of the cost of the security. A margin account gives the investor the option to use borrowed funds but does not require the investor to borrow the funds.

2-2. A stop-loss order is placed after the investor takes a position in a security. The order seeks to limit the investor's potential loss from a price movement in the wrong direction. For example, if an investor buys a stock for \$20, that individual may place a stop-loss order to sell at \$16 and thus avoid letting the price decline to \$12. Once the price declines to the specified price, the order becomes a market order and is executed.

2-3. The use of margin means the individual commits fewer of his or her funds than would be required for a cash purchase. This use of financial leverage increases the potential percentage return on the investor's funds if the price of the stock rises but correspondingly increases the potential percentage loss if the price falls.

2-4. a. Investors sell short in anticipation of a decline in a stock's price.

b. The short seller borrows the stock (through the broker) and sells it in anticipation of buying it back after the price has declined.

c. A short position is closed when the short seller purchases the security and returns it to the lender.

d. If the price does decline, the short seller profits because the shares are purchased for a lower price than they were sold. The investor makes a profit by buying low and selling high, but with a short sale the sale occurs first.

e. The risk from a short position is the fact that the price could rise instead of falling, in which case the short seller has to buy the stock at a higher price. In addition, there is no limit to how much the price of the stock may rise. As always, investors make profits by buying at one price and selling for a higher price.

2-5. FDIC insures depositors with funds in commercial banks and other depository institutions up to some specified limit (currently \$250,000) against loss from failure by the bank. SIPC is designed to protect investors from the failure of brokerage firms and insures investors up to \$500,000 from loss resulting from failure by a brokerage firm.

The primary purpose of the federal securities laws is to provide investors with sufficient information so they can make informed investment decisions. The laws require full and timely disclosure of any information that may affect the value of a firm's securities. While these laws provide investors with access to information, they do not guarantee that the investor will make wise decisions.

The role of the Securities and Exchange Commission (SEC) is to enforce the federal securities laws. The SEC seeks to protect investors by assuring the timely release of information and from loss due to illegal use of inside information and fraud in the firm's financial statements. This is achieved by having publicly owned firms file quarterly reports and annual reports (respectively the 10-Q and 10-K reports) and by requiring these firms to disclose information that may affect the value of the firm's securities. The SEC has the power to suspend trading in a security if the firm does not publicly disclose the required information.

2-6. a. The role of the investment banker is to sell either new issues or privately held securities (i.e., a secondary sale of privately held securities) to the general public. Investment bankers also sell securities in private placements.

b. The syndicate is a selling group formed by the lead investment banker(s) to facilitate the sale of stocks and bonds (i.e., the securities being issued).

c. The preliminary prospectus is registered with the SEC to inform the public of the securities and of the firm issuing the securities. It includes such information as the firm's financial statements, the use of the proceeds of the sale, which comprises the firm's management, and legal proceedings involving the firm. The final prospectus repeats this information with any updates and changes required by the SEC. This document is provided to each person who acquires the newly issued securities.

d. The Securities and Exchange Commission (SEC) is the federal agency that oversees the federal security laws. All publicly held corporate securities must be registered with the SEC, except small issues being sold in only one state which must be registered with that state's regulatory body. The SEC determines if the information is sufficient to meet the full disclosure laws. Only after this determination has been made may the securities be sold to the general public.

2-7. In an underwriting, the investment banker guarantees the firm issuing the securities a specified amount of money (i.e., the investment banker buys the securities at a specified

price). These funds must be delivered by the investment bankers even if they are subsequently unable to sell the securities to the public. Thus, with an underwriting, the risk associated with the sale rests with the investment bankers who will sustain a loss if the securities are unsold.

This loss occurs either through a price reduction, which is necessary to move the unsold securities, or through borrowing the money to pay for the securities acquired from the issuing firm. Borrowing funds to cover the unsold securities involves interest expense, which reduces the profit margin from the underwriting.

In a best-efforts agreement for the sale of securities, the risk rests with the firm issuing the securities. The investment banker agrees to make the best effort but does not guarantee the sale (i.e., does not buy the securities). If the securities are overpriced and do not sell, then the firm seeking the money will not receive the desired funds. Thus, the risk associated with the failure to sell the securities rests with the firm issuing the securities and not with the investment banker.

2-8. The question requests that students track the price of an IPO for a period of time to determine what happened after the initial sale. The ability to use this exercise will depend on the amount of activity in the IPO markets.

PROBLEMS

2-1. Gain on the stock: $\$1,750 - \$1,000 = \$750$

Margin Requirement	Margin	Return on Investor's Funds
25%	\$250	$\$750/\$250 = 300\%$
50%	\$500	$\$750/\$500 = 150\%$
75%	\$750	$\$750/\$750 = 100\%$

2-2. Loss on the stock: $\$750 - \$1,000 = (\$250)$

Margin Requirement	Margin	Return on Investor's Funds
25%	\$250	$-\$250/\$250 = -100\%$
50%	\$500	$-\$250/\$500 = -50\%$

75%

\$750

$-\$250/\$750 = -33.3\%$

The generalization implied by problems 1 and 2 is that if the margin requirement is small (e.g., 25 percent), then the potential return or loss on the investor's funds (i.e., the margin) is magnified for a given change in the stock's price.

2-3. Cost of 100 shares: \$10,000

- a. profit on the stock: $\$11,200 - \$10,000 = \$1,200$
percentage return (100% cash) $\$1,200/\$10,000 = 12\%$
- b. loss on the stock: $\$9,000 - \$10,000 = (\$1,000)$
percentage loss: (40% cash) $(\$1,000)/\$4,000 = -25\%$
- c. loss on the stock: $\$6,000 - \$10,000 = (\$4,000)$
percentage loss: (40% cash) $(\$4,000)/\$4,000 = -100\%$

2-4. This problem adds the interest that must be paid on the borrowed funds.

- a. The cost of the shares is $100 \times \$35 = \$3,500$.
Investor pays for the investment with cash and has no interest expense.
- b. Investor B borrows $\$3,500 \times 0.4 = \$1,400$ and has interest expense of $\$1,400 \times 0.08 = \112 .
- c. The capital gain for both investors is
 $\$4,000 - \$3,500 = \$500$

The percentage return for investor A is
 $\$500/\$3,500 = 14.3\%$

The percentage return for investor B is
 $(\$500 - 112)/(\$3,500 - 1,400) = \$388/\$2,100 = 18.5\%$

- d. The percentage returns differ because investor A borrowed 40 percent of the cost of the investment. Even though that investor paid interest, the use of financial leverage successfully increased the percentage return.

2-5. This is a much more comprehensive problem that considers not only the change in the security's price but also

commissions, dividends received, and interest on any loans resulting from buying the stock on margin. The instructor may wish to work through an example of the holding period return that encompasses dividends received, commissions paid, and any interest paid on a margin account before assigning this problem.

Determination of the amount invested and the amount borrowed (*margin requirement = 60 percent*):

	Cash Account	Margin Account
Cost of the stock	\$5,500	\$5,500
Commissions	110	110
Funds invested by the individual	5,610	.6(5,610) = 3,366
Funds borrowed	--	2,244

Percentage return on invested funds if the price of the stock is \$40:

	Cash Account	Margin Account
Proceeds of sale	\$4,000	\$4,000
Commissions	80	80
Net proceeds	3,920	3,920
Dividends received	500	500
Interest paid	---	.10(2,244) = 224
Capital loss (3,920 - 5,610)	(1,690)	(1,690)
Percentage loss on investor's funds	$\frac{\$-1,690 + 500}{\$5,610}$ = -21.2%	$\frac{\$-1,690 + 500 - 224}{\$3,366}$ = -42.0%

In this illustration the use of leverage (i.e., the buying of stock on margin) magnifies the percentage loss on the investor's funds.

Percentage return on invested funds if the price of the stock is \$55:

	Cash Account	Margin Account
Proceeds of sale	\$5,500	\$5,500
Commissions	110	110
Net proceeds	5,390	5,390
Dividends received	500	500
Interest paid	---	.10(2,244) = 224
Capital gain (5,390 - 5,610)	(220)	(220)

Percentage loss on investor's funds	$\frac{\$-220 + 500}{\$5,610}$ = 5.0%	$\frac{\$-220 + 500 - 224}{\$3,366}$ = 1.7%
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Percentage return on invested funds if the price of the stock is \$60:

	Cash Account	Margin Account
Proceeds of sale	\$6,000	\$6,000
Commissions	120	120
Net proceeds	5,880	5,880
Dividends received	500	500
Interest paid	---	.10(2,244) = 224
Capital gain	270	270
(5,880 - 5,610)		
Percentage gain on investor's funds	$\frac{\$270 + 500}{\$5,610}$ = 13.7%	$\frac{\$270 + 500 - 224}{\$3,366}$ = 16.2%

Percentage return on invested funds if the price of the stock is \$70:

	Cash Account	Margin Account
Proceeds of sale	\$7,000	\$7,000
Commissions	140	140
Net proceeds	6,860	6,860
Dividends received	500	500
Interest paid	---	.10(2,244) = 224
Capital loss	1,250	1,250
(6,860 - 5,610)		
Percentage loss on investor's funds	$\frac{\$1,250 + 500}{\$5,610}$ = 31.2%	$\frac{\$1,250 + 500 - 224}{\$3,366}$ = 45.3%

Determination of the amount invested and the amount borrowed (*margin requirement = 40 percent*):

	Cash Account	Margin Account
Cost of the stock	\$5,500	\$5,500
Commissions	110	110
Funds invested by	5,610	.4(5,610) = 2,244

the individual		
Funds borrowed	--	3,366

Percentage return on invested funds if the price of the stock is \$40:

	Cash Account	Margin Account
Proceeds of sale	\$4,000	\$4,000
Commissions	80	80
Net proceeds	3,920	3,920
Dividends received	500	500
Interest paid	---	.10(3,366) = 337
Capital loss	(1,690)	(1,690)
(3,920 - 5,610)		
Percentage loss on investor's funds	$\frac{\$-1,690 + 500}{\$5,610}$ = -21.2%	$\frac{\$-1,690 + 500 - 337}{\$2,244}$ = -68.0%

Percentage return on invested funds if the price of the stock is \$55:

	Cash Account	Margin Account
Proceeds of sale	\$5,500	\$5,500
Commissions	110	110
Net proceeds	5,390	5,390
Dividends received	500	500
Interest paid	---	.10(3,366) = 337
Capital gain	(220)	(220)
(5,390 - 5,610)		
Percentage loss on investor's funds	$\frac{\$-220 + 500}{\$5,610}$ = 5.0%	$\frac{\$-220 + 500 - 337}{\$2,244}$ = -2.5%

Percentage return on invested funds if the price of the stock is \$60:

	Cash Account	Margin Account
Proceeds of sale	\$6,000	\$6,000
Commissions	120	120
Net proceeds	5,880	5,880
Dividends received	500	500
Interest paid	---	.10(3,366) = 337
Capital gain	270	270
(5,880 - 5,610)		
Percentage gain on investor's funds	$\frac{\$270 + 500}{\$5,610}$ = 13.7%	$\frac{\$270 + 500 - 337}{\$2,244}$ = 19.3%

Percentage return on invested funds if the price of the stock is \$70:

	Cash Account	Margin Account
Proceeds of sale	\$7,000	\$7,000
Commissions	140	140
Net proceeds	6,860	6,860
Dividends received	500	500
Interest paid	---	.10(3,366) = 337
Capital loss	1,250	1,250
(6,860 - 5,610)		
Percentage loss on investor's funds	$\frac{\$1,250 + 500}{\$5,610}$ = 31.2%	$\frac{\$1,250 + 500 - 337}{\$2,244}$ = 63.0%

Summary:

Price of the stock	Percentage return:		
	Cash	Margin: 60%	40%
\$40	-21.2%	-42.0%	-68.0%
55	5.0	1.7	-2.5
60	13.7	16.2	19.3
70	31.2	45.3	63.0

This problem illustrates the use of margin including commissions, dividends, and interest paid on by the funds borrowed when margin is used. If security prices rise, the potential return is increased on the investor's funds when the stock is bought on margin. Correspondingly, if security prices fall, the percentage loss is increased. The magnification is greater when the margin requirement is smaller since the investor is able to borrow more funds to purchase the stock.

Also notice that the use of margin does not start to magnify the positive return until the price of the stock has risen sufficiently to offset the interest expense before the impact of leveraging the position is felt. (Make certain that the student realizes that the absolute amount of the capital gain or loss is not affected by the margin requirement. The impact is on the return on the investor's funds which depends not only on the capital gain but also the interest paid to finance the position and the amount of funds the investor has to commit to the position.)

2-6. The next three problems are concerned with selling short. Short sellers must put up collateral, so the percentage returns depend on the amount of cash the short seller must commit. In this problem, the collateral is 100 percent of the value of the stock sold short (\$4 per share).

a. If the stock's price doubles to \$8, the loss on the position is \$4 and percentage loss is $(\$4)/\$4 = (100\%)$. The short seller loses the entire collateral.

b. If the stock's price rises to \$10, the loss on the position is \$6 and percentage loss is $(\$6)/\$4 = (150\%)$. The short seller loses more than the original collateral and would be required to remit additional funds as the price of the stock rises.

c. If the price of the stock goes to \$0, the gain is \$4 and the percentage gain is $\$4/\$4 = 100\%$.

d. The best return the short seller can earn is 100 percent and for that to happen the price of the stock must decline to \$0. There is no limit to the potential percentage loss on the short sale.

e. Obviously having the stock go to \$0 is the best case scenario. The worse case occurs as the price of the stock rises, and there no limit to the potential loss on the short sale. (Margin requirements and margin calls that occur as the price of the stock rises limit the investor's potential loss.)

2-7. If an investor sells a stock short at \$36 and the margin requirement is 60 percent, the investor must deposit \$21.60

$(.6 \times \$36)$ with the broker. If the stock subsequently falls to \$30, the investor earns a profit of \$6 ($\$36 - 30$). The percent earned on the investor's funds is $\$6/\$21.60 = 27.8\%$

If the price of the stock rises to \$42, the investor sustains a loss of \$6 ($\$36 - 42$). The percentage of the investor's funds that is lost is $-\$6/\$21.60 = -27.8\%$

Notice that this problem does not consider brokerage fees and dividend payments (for which the short seller is responsible). In addition, the percentage earned or lost is not the rate of return except in the case that the holding period is one year.

2-8. In this problem the investor sells the stock short at \$50 and covers the short at \$42, so there is an \$8 gain on the transaction. The short seller, however, is responsible for the \$2 dividend, so the net gain on the transaction is \$6. The percentage return is $\$6/\$50 = 12\%$.

Teaching Guides for Financial Advisors Investment Case: INVESTING AN INHERITANCE

OBJECTIVE: Comparing buying stock with cash to acquiring stock using margin.

BACKGROUND: This case considers two individuals with different proclivities towards bearing risk. Both individuals will receive an inheritance of \$85,000. Other considerations such as employment, income, participation in pension plans and medical insurance are similar for both individuals so that the emphasis may be placed on the impact of a risky versus a less risky strategy is isolated.

TEACHING GUIDES FOR THE QUESTIONS

1. Darin:

Cash required for purchase: $\$6,000 + 70 = \$6,070$

Dividend received: \$150

Interest paid: \$0

Proceeds from sale: $\$8,000 - 70 = \$7,930$

Profits from sale: $\$7,930 - 6,070 = \$1,860$

Percentage earned: $(\$1,860 + 150)/\$6,070 = 33.1\%$

2. Victor:

Cash required for purchase: $(\$6,000 + 70)0.6 = \$3,642$

Amount borrowed: $\$6,070 - 3,642 = \$2,428$

Dividend received: \$150

Interest paid $(0.07 \times \$2,428)$: \$169.96

Proceeds from sale: $\$8,000 - 70 = \$7,930$

Profits from sale: $\$7,930 - 6,070 = \$1,860$

Percentage earned: $(\$1,860 + 150 - 169.96)/\$3,642 = 50.5\%$

Buying the stock on margin and using borrowed funds may increase the percentage return.

3. If the sale price were \$50, the percentage returns are
Darin:

Cash required for purchase: $\$6,000 + 70 = \$6,070$

Dividend received: \$150

Interest paid: \$0

Proceeds from sale: $\$5,000 - 70 = \$4,930$

Loss from sale: $\$4,930 - 6,070 = -\$1,140$

Percentage loss: $(-\$1,140 + 150)/\$6,070 = -16.3\%$

Victor:

Cash required for purchase: $(\$6,000 + 70)0.6 = \$3,642$

Amount borrowed: $\$6,070 - 3,642 = \$2,428$

Dividend received: \$150

Interest paid $(0.07 \times \$2,428)$: \$169.96

Proceeds from sale: $\$5,000 - 70 = \$4,930$

Loss from sale: $\$4,930 - 6,070 = -\$1,140$

Percentage loss: $(-\$1,140 + 150 - 169.96)/\$3,642 = -31.8\%$

If the sale price were \$100, the percentage returns are
Darin:

Cash required for purchase: $\$6,000 + 70 = \$6,070$

Dividend received: \$150

Interest paid: \$0

Proceeds from sale: $\$10,000 - 70 = \$9,930$

Gain from sale: $\$9,930 - 6,070 = \$3,860$

Percentage gain: $(\$3,860 + 150)/\$6,070 = 66.1\%$

Victor:

Cash required for purchase: $(\$6,000 + 70)0.6 = \$3,642$

Amount borrowed: $\$6,070 - 3,642 = \$2,428$

Dividend received: \$150
Interest paid (0.07 X \$2,428): \$169.96
Proceeds from sale: \$10,000 - 70 = \$9,930
Gain from sale: \$9,930 - 6,070 = \$3,860

Percentage gain:
 $(\$3,860 + 150 - 169.96) / \$3,642 = 105.4\%$

4. Since Darin only uses cash, he may take delivery. Victor, however, must leave the stock with the broker as collateral for the loan. Even though Darin may take delivery, there are advantages associated with leaving the securities registered with the broker, the primary one being convenience. Since the brokerage firm is insured by SIPC, there is no additional risk associated with leaving the securities in street name.

5. An increase in the interest rate charged by the broker would have no impact on Darin's return, since he has not borrowed funds to acquire the stock. Victor's return would be reduced as he would have to pay more interest expense to carry the securities.

6. Maintenance margin only applies to stock purchased on margin, so it would have no affect on Darin's position. Victor, however, is using margin, and if the price of the stock decline sufficiently, the maintenance margin requirement would require that he deposit additional cash or securities with the broker. The price of the stock that will result in a margin call is

$$0.3 = \frac{(100 \times P) - \$2,428}{100 \times P}$$

$$P = \$2,428/70 = \$34.69.$$

An alternative calculation is $P = \$24.28/.7 = \$34.69.$

If the price of the stock is \$50, the decline is insufficient to generate a margin call.

7. If you anticipate that Darin will acquire a low yielding savings account, there is an argument that he should buy stock. Since his general financial condition is secure, he is capable of bearing additional risk in order to earn a higher

return. As is discussed later in the text, the historical returns on stocks over an extended period of time exceed other traditional investments. (You may use this question as a means to introduce historical returns on various alternative investments.)

Victor's financial condition is the same as Darin, but he is likely to purchase extremely risky investments or squander the money. As with Darin, buying stock also makes sense, but if Victor needs additional risk and higher potential return, they may be achieved by acquiring the stock of margin.

For either individual, acquiring stock is probably a better alternative than a very low risk, low return strategy or a very high risk, high return strategy, especially if the latter results in the individual not investing but perhaps gambling away the funds.