

## §3. EQUITY SECURITIES

FIN 366: INVESTMENTS  
© JOSEPH FARIZO



## TABLE OF CONTENTS

---

Investments in Real and Financial Assets.....	3
Equity Securities.....	3
Common Stock.....	3
Stock Quotes.....	4
Bid and Ask Prices.....	5
Preferred Stock and ADRs .....	6
Order Types.....	6
Market Orders .....	6
Price Contingent Orders .....	7
Buying on Margin.....	8
Short Selling.....	11
Critical Thinking Questions .....	16
Analytical Questions .....	18
CFA Questions .....	20
Notes & References .....	21

## INVESTMENTS IN REAL AND FINANCIAL ASSETS

---

An **investment** is a reduction of current consumption in expectation of greater future consumption. Investments require an *expectation* of a future benefit, not necessarily a *realization*.

1. **Real assets** directly contribute to the creation of goods and services (land, equipment, buildings, a college education.)
2. **Financial assets** indirectly contribute to the creation of goods and services via allocation of money and resources to finance real assets. Include *securities* or *financial instruments*, including stocks, bonds, and derivatives.



A financial asset to you is a liability to another party. Financial assets “cancel out,” leaving only real assets as material wealth in a society. A mortgage is a liability to the homeowner but an asset to the bank. A share of stock is an asset to the holder, but a claim on the firm’s assets. The home and the firm’s assets are the real assets.

## EQUITY SECURITIES

---

### COMMON STOCK

Equity securities primarily consist of **common stock** or **shares**, which represents ownership interest in a publicly held corporation. Common stockholders, or **shareholders**, are owners of a firm. Equity shares include the following features:

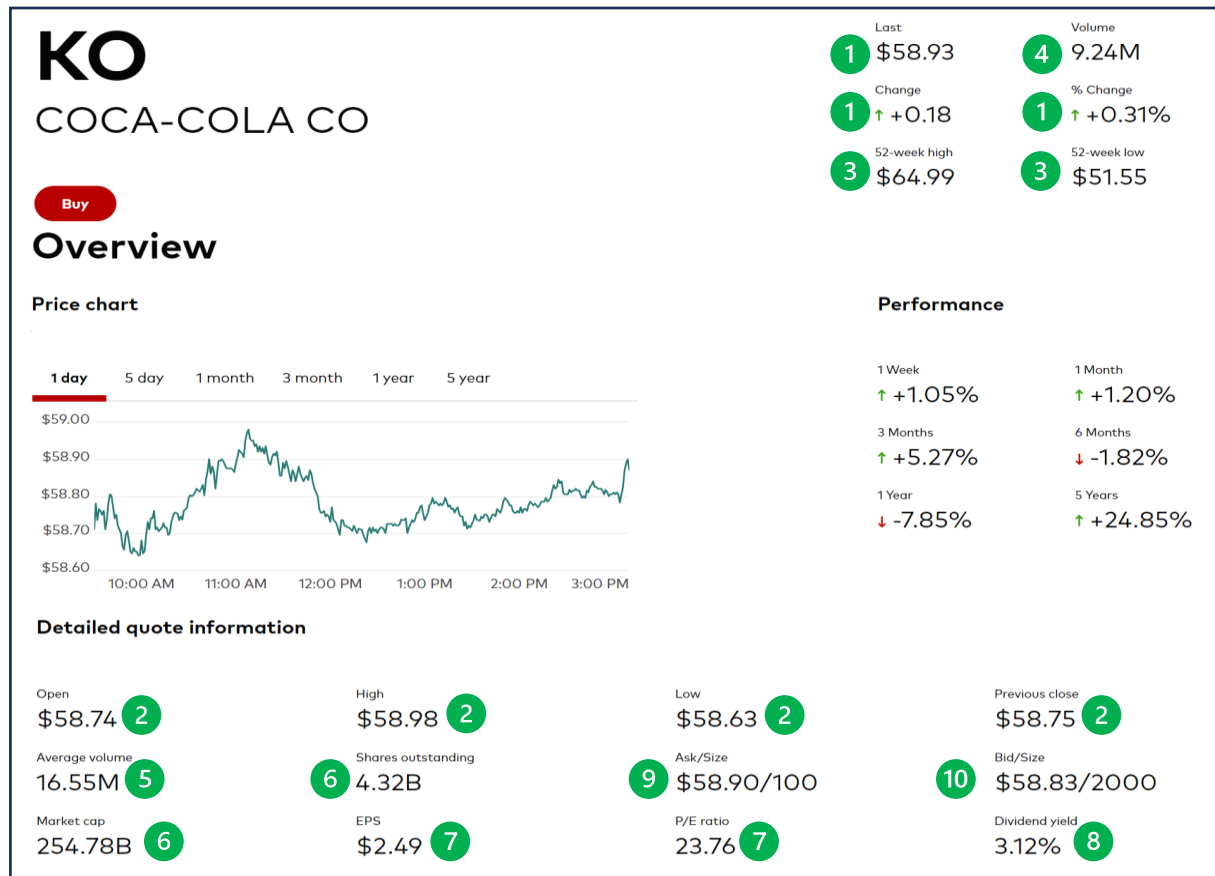
1. *Residual claim* on the firm
2. *Dividends* (if paid)
3. *Limited liability*
4. *Voting rights* for directors, auditor, advisory executive compensation, mergers



Search for stock listings at the *WSJ Market Data Center*:  
<https://www.wsj.com/market-data/quotes>.

## Stock Quotes

Figure 1: Stock Quote (from Vanguard)



Coca-Cola Company stock (ticker KO) last traded at **1** **\$58.93**, which is about **\$0.18** or **0.31%** higher than where it began the day trading at **2** **\$58.74**. KO went as high as **\$58.98** during the day and as low as **\$58.63** after closing the previous day at **\$58.75**. Over the last 52 weeks, it was as high as **3** **\$64.99** and as low as **\$51.55**. KO shares exchanged hands **4** **9.24 million** times today, a bit lower than its daily average of **5** **16.55 million**. The size or market capitalization (overall market value of equity) of this firm is **6** **\$254.78 billion** (shares outstanding multiplied by the last price). The P/E ratio, or the stock price per share divided by its earnings (net income) per share EPS, is **7** **23.76**. Finally, the dividend yield or annual dividend divided by the stock price is **8** **3.12%**.

### *Bid and Ask Prices*

The bid and ask prices are the prices that an investor can sell or buy a security for.

- **Bid Price:** the price at which the dealer is willing to buy (bids for) a security.
- **Ask Price:** the price at which the dealer is willing to sell (asks for) a security.

Therefore,

- **Bid Price:** the price at which you as the trader sells a security.
- **Ask Price:** the price at which you as the trader pays for a security.



Investors “pay the **ask**” and “sell to the **bid**.” Pay what the dealers and markets are asking and sell to what dealers and the markets are bidding.

For KO, you would have to pay **9** **\$58.90** to purchase a share. If you have shares to sell, the market/dealer is “bidding” **10** **\$58.83** for a share, and this is the amount you would receive. The **ask size** is **100** while the **bid size** is **2000**. This means you can buy up to 100 shares at that ask price or sell up to 2000 shares at the bid price.

Dealers profit on the bid-ask spread, the positive difference between these two prices. Even if a broker offers commission free trading, investors still pay the implicit cost of the bid-ask spread.



What does a wide bid-ask spread imply about liquidity? What do you think if you want to buy more than the ask size or sell more than the bid size?

---

---

---

---

---

---

## PREFERRED STOCK AND ADRS

Equity securities also include **preferred stock** and **American Depositary Receipts**.

1. **Preferred Stock:** nonvoting shares usually paying cumulative fixed dividends. Holders have a residual claim before that of common stockholders, but *after* bond holders.
  
2. **American Depositary Receipts (ADRs):** a US-dollar denominated certificate issued by a US bank that represents ownership interest in a foreign stock such as Nestle, Alibaba, AstraZeneca.

## ORDER TYPES

---

### MARKET ORDERS

**Market orders** are submitted with a broker to buy or sell at the best possible current price (buy at the lowest ask or sell to the highest bid).



The **Cboe Book Viewer** allows you to view the **order book** for stocks you search. It will show the **top of the book**: the best available (lowest) ask prices and the best available (highest) bid prices with the associated ask and bid sizes:

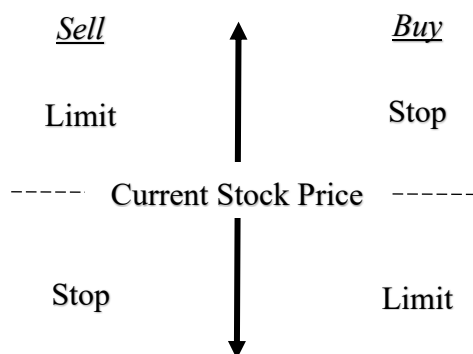
[https://www.cboe.com/us/equities/market\\_statistics/book\\_viewer/](https://www.cboe.com/us/equities/market_statistics/book_viewer/)

## PRICE CONTINGENT ORDERS

**Price Contingent Orders** are executed depending on whether the security's price has met, exceeded, or fell below some specified value:

- **Buy Limit**: buy if share price is at or below a specified price ('good deal')
- **Sell Limit**: sell if share price is at or above a specified price ('cash out')
- **Buy Stop**: buy when share price is at or above a specified price ('about time'/'protect short')
- **Sell Stop** or **Stop Loss**: sell when share price is at or below a specified price ('cut losses')

*Figure 2: Price Contingent Orders*



View examples of each of the orders above in the Excel file [Order Types](http://josephfarizo.com/fin366.html) at [josephfarizo.com/fin366.html](http://josephfarizo.com/fin366.html).



If you submit a price contingent order with your broker, are you guaranteed you will transact at your chosen price? Are you guaranteed you will get all the shares you request?

---

---

---

## BUYING ON MARGIN

**Buying on Margin** is the use of borrowing and debt to invest an amount greater than money in an account allows. As with using *leverage* in any investing context:

- Higher upside potential
- Greater losses possible

The **margin** is the portion of an account contributed by the investor (the investor's *equity* in the account). The remainder is contributed by a **broker's call loan**, so named because the money the broker lends the investor may itself be borrowed from a bank and payable "on call."

- **Initial Margin:** At the outset, an investor must *own* at least 50% of the assets in the account by **Regulation T** of the Federal Reserve.<sup>1</sup> The broker may require a greater percentage but cannot require less.

The value of the securities in an account can fluctuate such that the investor's equity in the account is too low (or you *owe* more to the broker than you *own* in securities in the account).



- **Maintenance Margin:** This is the level below which a *margin call* will be issued, whereby the broker will require the investor to add new cash or securities to increase the investor's equity in the account. The maintenance margin may be no less than 25% by **Financial Industry Regulatory Agency (FINRA) Rule 4210.**<sup>2</sup> The broker may require a greater percentage but cannot allow for less.

Brokers have discretion to sell securities from the investor's account if the investor does not contribute funds to keep their equity above the maintenance margin.



**PRACTICE:** Assume you would like to buy 100 shares of JJD Corp., currently trading at \$100. You will contribute \$6,000 and borrow the rest from your broker.

- What is your initial margin?
- What is the margin if the stock price falls to \$68? What if it rises to \$132? Construct balance sheets.
- At what price would a margin call be triggered assuming a maintenance margin of 30%?
- What are your returns with and without leverage if the share goes to \$68 or \$132, assuming the interest on the loan is 3%?

We will use the Excel file [Buying On Margin](http://josephfarizo.com/fin366.html) available at [josephfarizo.com/fin366.html](http://josephfarizo.com/fin366.html).

**SOLUTION:** Beginning with the initial margin, let's construct the balance sheet.

<b>ASSETS</b>	<b>LIABILITIES AND EQUITY</b>
Value of Stock _____	Loan from Broker _____
	Equity _____

Compute the initial margin:

$$\text{Margin} = \frac{\text{Equity in Account}}{\text{Value of Stock}} = \frac{\quad}{\quad} = \quad$$

If the share price falls to \$68:

ASSETS	LIABILITIES AND EQUITY
Value of Stock _____	Loan from Broker _____
	Equity _____

The margin becomes:

$$\text{Margin} = \frac{\text{Equity in Account}}{\text{Value of Stock}} = \text{_____} =$$

If the share price rises to \$132:

ASSETS	LIABILITIES AND EQUITY
Value of Stock _____	Loan from Broker _____
	Equity _____

The margin becomes:

$$\text{Margin} = \frac{\text{Equity in Account}}{\text{Value of Stock}} = \text{_____} =$$

To determine the price that the share must fall to before a broker issues a margin call, we solve for the following (which equates the margin after a price change and the maintenance margin) for the price  $P$ . Notice that our *asset* is a function of the price  $P$ :

$$\frac{\text{Equity}}{\text{Value of Shares}} = \frac{(\text{Shares Purchased} \times P) - \text{Original Loan}}{(\text{Shares Purchased} \times P)} = \text{Maint. Margin}$$

Thus,

$$\frac{(\text{_____} \times P) - \text{_____}}{(\text{_____} \times P)} =$$

Solving for  $P$  yields the price \_\_\_\_\_, implying that if the shares fall to this value, a margin call will be issued and more cash or liquid assets (T-bills) would need to be contributed to the account.

Finally, we determine what our returns are with and without leverage if the stock rises to \$132 or falls to \$68, and assuming 3% simple interest when buying on margin. We'll use the percent change formula:

$$\% \text{ Change} = \frac{\text{New} - \text{Old}}{\text{Old}} = \frac{(\text{Invest. Value} - (\text{Loan} + \text{Interest})) - \text{Initial Invest.}}{\text{Initial Invest.}}$$

If the stock is up to \$132 without leverage:

$$\% \text{ Change} = \frac{\quad - \quad}{\quad} =$$

If the stock is down to \$68 without leverage:

$$\% \text{ Change} = \frac{\quad - \quad}{\quad} =$$

If the stock is up to \$132 with leverage:

$$\% \text{ Change} = \frac{\quad - \quad}{\quad} =$$

If the stock is down to \$68 with leverage:

$$\% \text{ Change} = \frac{\quad - \quad}{\quad} =$$

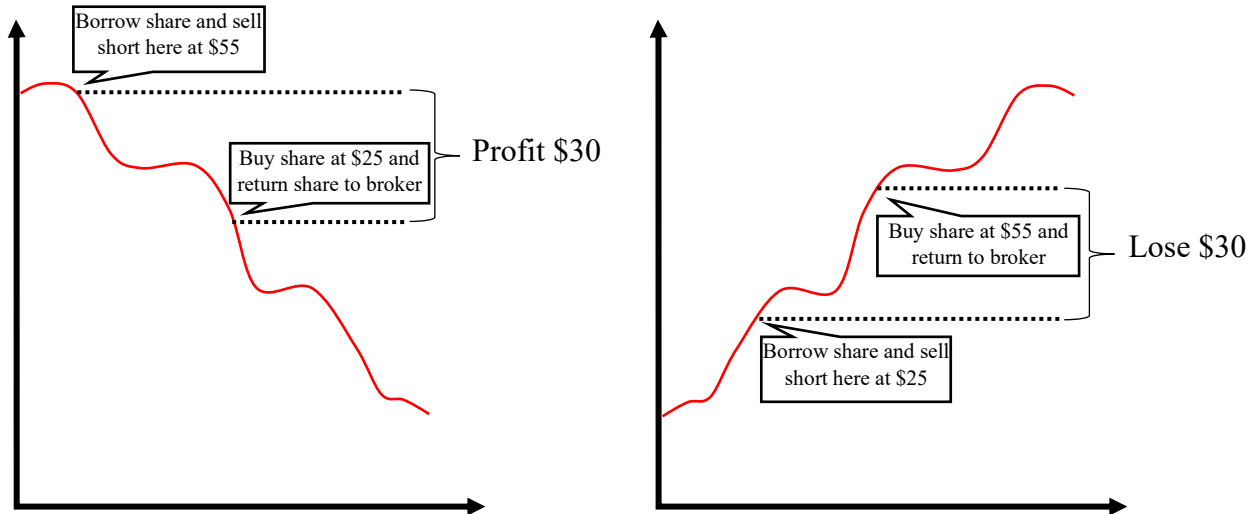
**INTERPRETATION:** Notice that the *magnitudes* of the positive return and negative return with leverage are greater than the *magnitudes* without leverage. You stand to gain more but at greater risk when buying on margin.

## SHORT SELLING

Investors who are **bullish** (expecting share prices to rise) may consider buying on margin. Investors who are **bearish** (expecting share prices to fall) on a security may consider **short selling** shares.

**Short selling** is the sale of securities not owned by the investor but borrowed through a broker. The investor expects to borrow the shares today, sell them at current market prices, then buy them back later at a lower price to return to the broker - **covering the short**.

*Figure 3: Short Selling*



Short selling can be substantially riskier than buying a stock outright. Why? What happens if you short a share at \$100 and its price rises to \$150? \$500? \$1,000?

---



---



---



**PRACTICE:** You are bearish on AADC Corp. shares. They trade at \$100, and you short 1000 shares on 65% margin.



- What is your profit if the shares fall to \$68?
- What is your profit if the shares rise to \$128?
- At what price would a margin call be triggered assuming a maintenance margin of 25%?

We will use the Excel file [Short Selling](http://josephfarizo.com/fin366.html) available at [josephfarizo.com/fin366.html](http://josephfarizo.com/fin366.html).

**SOLUTION:** We'll construct an initial balance sheet, then balance sheets assuming shares rise and fall to help us determine the profit and loss in each case.

Upon borrowing the shares and selling on the market, the cash is added to your account. Given you borrowed these shares, it results in a liability. The problem states you've sold on margin, implying that you must have *some* assets in your account already. We'll say that you have short term and highly liquid Treasury bills (or **T-bills**) in your account.

These T-bills will effectively be our "cash": issued and backed by the federal government.

*Initial balance sheet...*

<b>ASSETS</b>		<b>LIABILITIES AND EQUITY</b>	
Cash (from stock)	_____	Short Position	_____
T-Bills	_____	Equity	_____

*If the share price falls...*

<b>ASSETS</b>		<b>LIABILITIES AND EQUITY</b>	
Cash (from stock)	_____	Short Position	_____
T-Bills	_____	Equity	_____

*If the share price rises...*

<b>ASSETS</b>		<b>LIABILITIES AND EQUITY</b>	
Cash (from stock)	_____	Short Position	_____
T-Bills	_____	Equity	_____

We determine the proceeds in each case, as well as the percent return based on the original investment (our initial margin):

*If the share price falls...*

$$\text{Proceeds from Sale} - \text{Covering the Short} = \text{Profit}$$

$$\underline{\hspace{2cm}} - \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

Return as a percentage of the original investment:

$$\text{Profit} \div \text{Original Investment} = \% \text{ Return}$$

$$\underline{\hspace{2cm}} \div \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

*If the share price rises...*

$$\text{Proceeds from Sale} - \text{Covering the Short} = \text{Profit}$$

$$\underline{\hspace{2cm}} - \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

Return as a percentage of the original investment:

$$\text{Profit} \div \text{Original Investment} = \% \text{ Return}$$

$$\underline{\hspace{2cm}} \div \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

To determine how high the share price can rise before a margin call, we solve for the price  $P$  in the maintenance margin equation, noticing that our *liability* is now a function of  $P$ :

$$\frac{\text{Equity}}{\text{Value of Shares Owed}} = \frac{\text{Assets} - (\text{Shares to Cover} \times P)}{(\text{Shares to Cover} \times P)} = \text{Maint. Margin}$$

Thus,

$$\frac{\hspace{2cm} - (\hspace{2cm} \times P)}{(\hspace{2cm} \times P)} = \text{Maint. Margin}$$

Solving for P yields the price \_\_\_\_\_, implying that if the shares rise to this value, a margin call will be issued and more T-bills or cash would need to be contributed to the account.

**INTERPRETATION:** Short positions gain when share prices fall and lose when share prices rise. Like buying on margin, there are margin requirements with shorting.



Brokers also charge interest on the value of your short position, and you as the investor will be expected to pay back the value of any dividends if you short a dividend paying stock.

## CRITICAL THINKING QUESTIONS

---

1. You put \$10 in a slot machine and immediately win \$300. Why is this not considered an investment?
2. You pay \$300 for a stock that falls in value to \$10. Why is this considered an investment?
3. How are financial assets “claims on real assets and income”? Do real or financial assets represent the material wealth in a society?
4. What is a residual claim, and how can one determine the book and market values of a residual claim on a firm?
5. What does *limited liability* imply for shareholders of a public firm if the firm liquidates but is unable to pay its lenders in full?
6. Why might limited liability be attractive in encouraging entrepreneurship?
7. Why might a younger firm decide to not pay dividends to shareholders?
8. In what way are large institutional investors holding millions of shares of a company more likely to be better monitors of firm management than small investors?
9. What is the ask price for a security? The bid price? Why do these differ, and do we expect they will be the same for all investors at a point in time for a given stock?
10. What is the bid-ask spread and how does it represent a trading cost for an investor? How is it a source of profit to the dealer?
11. A stock’s volume on a given day is twice as high as its average volume. What does this mean? What might have caused higher volume?
12. What are the differences between common stock and preferred stock? Which of these types of stock are entitled to receive all dividends that the firm “skips”?
13. Is it possible for a stock to simultaneously sell for two different prices to two different investors at the same point in time?
14. Identify each of the following market or price contingent orders:
  - a. MSY is currently trading at \$6 per share. You want to wait to purchase MSY until it reaches \$8 because you think it will rise much higher, but only after it reaches \$8.
  - b. You are looking to sell SEVL that is currently trading at \$10 per share, but you want to receive at least \$12 per share.
  - c. You own HON that currently trades at \$20 per share. Your goal is to make at least \$5 per share if the price were to drop. You create an order to sell at \$15.
  - d. You submit an order to purchase shares of CHN as quickly as possible at the best possible price.
  - e. FWND is currently trading at \$10 per share. You are interested in purchasing shares, but you only want to pay \$8 per share at most.
15. Explain how setting a buy limit can be risky.
16. Explain how a sell limit can result in an investor missing out on stock gains.
17. How can buying on margin offer greater upside potential than investing in stocks without borrowing? How can it amplify risks?
18. Define the initial and maintenance margins. What are the levels that they must be, and who establishes each level? What might cause the initial margin to fall to a point where a margin call occurs?



19. Describe the mechanism for how you can sell short shares if you do not own them. What does “covering the short” mean?
20. Why does the value of your liability when buying on margin remain a constant dollar amount while the value of your liability when short selling fluctuates?
21. What makes a *short* position in a stock riskier than a *long* position in a stock? Assuming no margin, how much can your losses be if you are short a stock?
22. How might you use a *buy stop* in conjunction with a short position to protect yourself from unlimited losses? (*Hint*: Assume you short 1 share of DNLE at \$100 but set a buy stop for 1 share at \$105 before the shares rise to \$200 and before you cover the short.)
23. How might you use a *sell stop* in conjunction with a long position to protect yourself from the stock falling? Would this protect against unlimited losses?
24. **CHALLENGE** How might large institutional investors help to mitigate the agency problem through their voting power?
25. **CHALLENGE** A **short squeeze** occurs when a stock’s price rapidly rises forcing short sellers to cover their positions to prevent increasing losses. How might a short squeeze further help investors who are *long* a stock?
26. **CHALLENGE** **Market depth** refers to the ability of a stock to “absorb” large orders without moving the stock’s price significantly. What types of firms are likely to have greater depth? Where might we observe a stock’s depth?
27. **CHALLENGE** **Short interest** is the number of shares or percentage of shares of a stock that has been sold short relative to the shares outstanding. How might investors use a stock’s short interest as a signal for sentiment?
28. **CHALLENGE** **Dual class stocks** are stocks that offer two or more “classes” of shares that may differ in their voting rights. For example, Alphabet Class A shares are entitled to 1 vote per share, Class B shares are entitled to 10 votes per share (and are held only by insiders), and Class C shares have no voting power. What might this mean for the agency problem? Which share class, A or C, do we expect to trade at a higher price (B doesn’t trade publicly)?
29. **CHALLENGE** **Staggered boards** are boards where only a few of the directors at the firm are up for election at a time rather than the full slate of directors up for election all at once. For example, on a nine-person board, three may be up for election in one year, three the next year, and the last three in the third year. How might this prevent corporate takeovers by powerful voters? What might some disadvantages of this system be?
30. **CHALLENGE** **Stock repurchases** (or **stock buybacks**) occur when a firm uses cash to “buy back” its own shares and remove them from the market. For example, suppose a firm executive owns 49 thousand shares of their company that has 100 thousand total shares outstanding, and they direct the company to repurchase 10 thousand shares from the market. This reduces outstanding shares to 90 thousand. If the executive still personally owns the same 49 thousand shares after the company repurchased shares from other investors, what does this buyback mean for the executive’s level of ownership interest in the firm? What about their voting power? How might this protect a firm from being taken over?

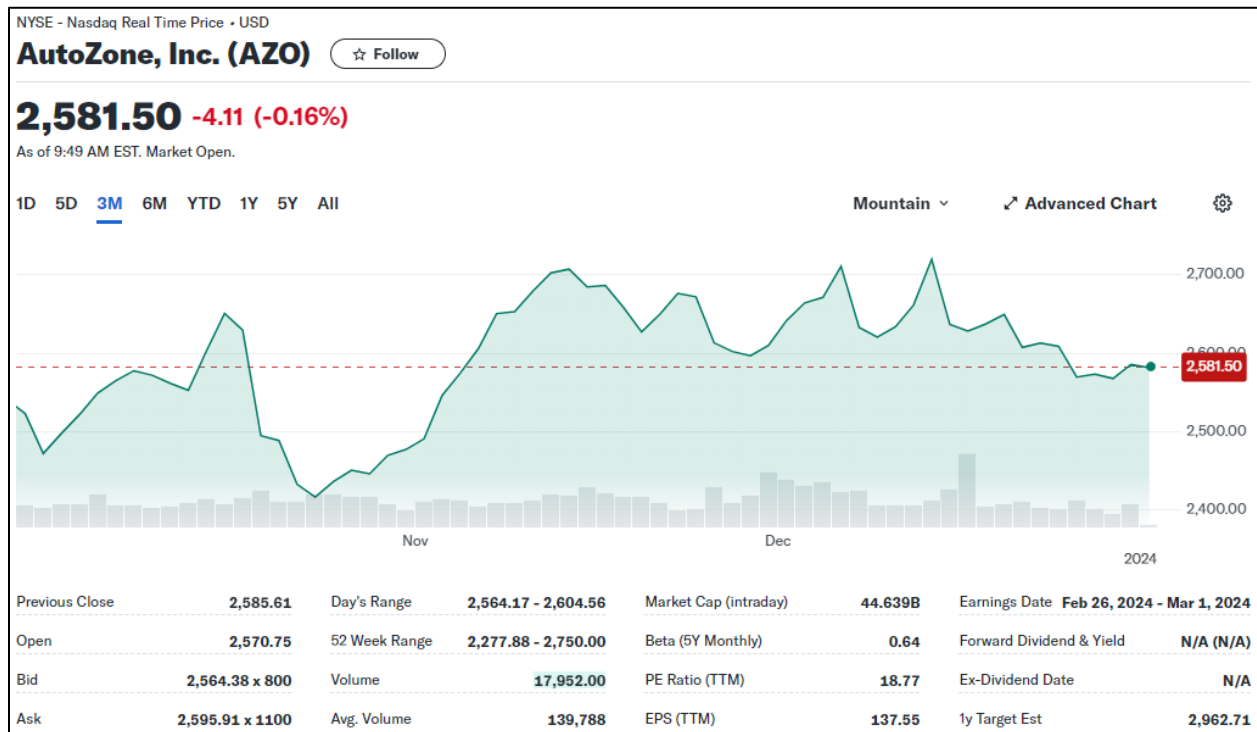
## ANALYTICAL QUESTIONS

1. Use the screenshot from the Cboe Book Viewer to answer the questions below. Assume you are a broker working on behalf of a client, and that you can trade at the prices in this table.

HASBRO INC COM		797		671	
TOP OF BOOK			LAST 10 TRADES		
	SHARES	PRICE	TIME	PRICE	SHARES
<b>ASKS</b>	20	52.14	07:56:55	50.21	21
	4	51.94	07:56:55	50.21	30
	1	51.70	07:00:00	50.37	2
	99	51.49	07:00:00	50.37	78
	50	51.30	07:00:00	50.37	22
<b>BIDS</b>	1	50.20	07:00:00	50.00	78
	20	50.17	07:00:00	50.00	15
	2	50.01	07:00:00	50.00	8
	7	50.00	07:00:00	50.00	4
	110	49.90	07:00:00	50.00	4

- a. You need to buy 150 shares of Hasbro for a client. How much would this cost your client?
- b. Another client of yours already owns hundreds of shares of Hasbro but wants to sell some shares to make another stock purchase. How many shares of Hasbro do they need to sell if they need exactly \$1253.62?

2. Use the stock quote information for AutoZone, Inc. below to answer the questions that follow.



- What is the bid-ask spread on this stock? How many shares can you sell and buy at the given bid and ask prices?
- Why is the last price of \$2,581.50 not the bid or ask price?
- Assume you want to buy this stock but think it is a bit too expensive. What order would you use if you want to only pay \$2,560 for this stock?
- Assume you bought this stock 53 weeks ago and set a stop loss at \$2,275. Would your order have been executed? What if you set your stop loss at \$2,280?
- Assume you own this stock and set a sell limit order at the beginning of November for \$2,800. Would your order have executed?

## CFA QUESTIONS

---

Answers are in the *Notes & References* section below.<sup>3</sup>

1. The current price of a stock is \$25 per share. You have \$10,000 to invest. You borrow an additional \$10,000 from your broker and invest \$20,000 in the stock. If the maintenance margin is 30 percent, at what price will a margin call first occur?
  - a. \$9.62
  - b. \$17.86
  - c. \$19.71
  
2. You own shares of a company that are currently trading at \$30 a share. Your technical analysis of the shares indicates a support level of \$27.50. That is, if the price of the shares is going down, it is more likely to stay above this level rather than fall below it. If the price does fall below this level, however, you believe that the price may continue to decline. You have no immediate intent to sell the shares but are concerned about the possibility of a huge loss if the share price declines below the support level. Which of the following types of orders could you place to most appropriately address your concern?
  - a. Short sell order
  - b. Sell stop order
  - c. Buy stop order

## NOTES & REFERENCES

---

<sup>1</sup> Regulation T: <https://www.federalreserve.gov/supervisionreg/reglisting.htm>

<sup>2</sup> FINRA Rule 4210: <https://www.finra.org/rules-guidance/rulebooks/finra-rules/4210>

<sup>3</sup> CFA Question answers: 1) B, 2) B

