

- a. Given the data below on the number of shares outstanding and their share prices at time ( $t$ ) and time ( $t + 1$ ), what is the percentage change in the Quad Index if it is calculated as a price-weighted index? As a value-weighted index?

STOCK	# OF SHARES OUTSTANDING	PRICE AT TIME ( $t$ )	PRICE AT TIME ( $t + 1$ )
Uno	1000	\$10	\$11
Dos	500	20	21
Tres	250	40	42
Fore	100	50	60

- b. Instead of the prices shown above, suppose we switch the prices for Uno and Fore. That is, Uno's stock price is \$50 at time ( $t$ ) and it rises to \$60 by time ( $t + 1$ ) and Fore's stock price rises from \$10 to \$11 over the same time frame. What is the percentage change in the Quad Index if it is computed as a price-weighted index? As a value-weighted index?
- c. Explain similarities or differences in your answers to parts (a) and (b).

9. A U.S. firm wants to raise \$10 million of capital so it can invest in new technology. How much will it need to raise in order to net \$10 million, using the average costs of raising funds in the chapter?

10. A U.S. firm wants to raise \$15 million by selling 1 million shares at a net price of \$15. We know that some say that firms "leave money on the table" because of the phenomenon of underpricing.

- a. Using the average amount of underpricing in U.S. IPOs, how many fewer shares could it sell to raise these funds if the firm received a net price per share equal to the value of the shares at the end of the first day's trading?
- b. How many less shares could it sell if the IPO was occurring in Germany?
- c. How many less shares could it sell if the IPO was occurring in Korea?
- d. How many less shares could it sell if the IPO was occurring in Canada?

11. Below are the results of a Dutch auction for an IPO of Bagel's Bagels, a trendy bagel and coffee shop chain. Bagel's is offering 50 million shares.

BIDDER	BID PRICE	NUMBER OF SHARES
Matthew	\$50.25	15 million
Kevin	49.75	20 million
Amy	49.45	20 million
Megan	49.00	10 million

- a. What will be the clearing price?
- b. How many shares will each bidder receive if Bagel's allocates shares on a pro rata basis to all the successful bidders?

12. Boneyard Biscuits' Dutch auction for an IPO was a great success. The firm offered 100 million shares. Bids appear below.

BIDDER	BID PRICE	NUMBER OF SHARES
Manahan	\$25.25	25 million
Campbell	24.95	30 million
Maloney	24.75	25 million
Touma	24.40	10 million
Clark	24.40	30 million
Fry	24.25	15 million

- a. What is the clearing price?
- b. What options do Boneyard and its underwriters have for allocating shares? How many shares will each bidder receive under each option?

13. **EXCEL** Develop a spreadsheet to do the dollar amount and percentage profit and loss calculations in questions 4 and 5. Use as inputs to the spreadsheet the amount of your funds you are investing, the initial margin percentage, the maintenance margin percentage, and the stock's price. In addition, have the spreadsheet calculate the stock price at which you'll receive a margin call.

14. **EXCEL** Expand the spreadsheet of problem 13 to consider one extra source of return and one extra cost to using margin. Specifically, modify the spreadsheet to include expected dividends per share and the cost of the margin loan (stated in APR format).

Assume that Broussard Corporation pays a dividend of \$0.50 per share, Mattco pays an annual dividend of \$0.80 per share, and the margin loan rate is 6 percent.

15. **EXCEL** Adjust the spreadsheet and its calculations in problem 13 for one more complication: have the length of the holding period (in quarters) be one of the spreadsheet's inputs. Compute the annualized return if the holding period for Mattco stock were (a) three months and (b) six months.

16. **Challenge Problem** Get stock price data from <http://finance.yahoo.com/> for ten stocks in the Dow Jones Industrial Average for the prior ten days and use these prices to compute a price-weighted index for each of these ten days. Chart the performance of your index versus the DJIA over this time period. How closely do they track one another? What is the total percentage change in each index? Comment on the differences in performance over this time frame.

## LEARNING EXTENSION II

### Introduction to Futures and Options

In addition to stocks and bonds, the financial system has developed other investment vehicles to meet the needs of various market participants. A type of instrument that is gaining widespread use among institutional investors and corporate financial managers is derivative securities. A **derivative security** has its value determined by, or derived from, the value of another investment vehicle. They go by a variety of names, such as forwards, futures, options, and swaps. In this learning extension we will focus on two types of derivatives, futures and options.

*derivative security*  
a security whose value is based upon or derived from the value of another investment vehicle

#### WHY DO DERIVATIVES EXIST?

Most assets that you are probably familiar with, such as stocks, bonds, gold, or real estate, are traded in the cash or **spot market**. The stock exchanges and the primary and secondary markets we examined earlier in the text are examples of spot markets. Trades occur in these markets, and cash, along with ownership of the asset, is transferred from buyer to seller.

At times, however, it may be advantageous to enter into a transaction now with the promise that the exchange of asset and money will take place at a future time. Such an exchange allows a transaction price to be determined today for a trade that will not occur until a mutually agreed upon future date. Such is the case with a futures contract. As an example, in June a wheat farmer may desire to lock in the price at which he can sell his harvest in September. That way, his profits will not be affected by price swings in the wheat spot market between now and harvest.

For others, it may be desirable to enter into an agreement that allows for a future cash transaction but only if the contract buyer finds it in his best interest to do so. A derivative security called an **option contract** allows the purchaser to ultimately decide whether or not to execute the trade in the future. For example, a real estate developer may purchase an option for \$10,000 to buy property at a fixed price of \$500,000 sometime in the next year. Should the value of the property rise above \$500,000 in the coming year, he will most likely choose to execute the option and purchase the land for \$500,000, or a wheat farmer may enter into an option contract to sell his harvest at a predetermined price, say, \$3.00 a bushel. Should the spot market wheat price at harvest be \$2.50/bushel, he will execute his option and receive the predetermined price of \$3.00 a bushel. Should the spot wheat price be higher, say \$4.00, he will choose to sell his wheat at the higher spot price and let the option contract expire. Similar option contracts exist for financial assets such as individual stocks, stock indexes, interest rates, and currencies.

*spot market*  
the cash market for trading securities; where securities are bought and sold