CHAPTER 23

Risk Management: An Introduction to Financial Engineering

I. DEFINITIONS

HEDGING

a 1. _____ is the process of reducing a firm's exposure to price or rate fluctuations.
   a. Hedging
   b. Volatility
   c. Diversification
   d. Value minimization
   e. Translation

DERIVATIVE SECURITY

b 2. A financial asset that represents a claim to another financial asset is called a(n):
   a. initial public offering.
   b. derivative security.
   c. seasoned equity offering.
   d. Eurobond.
   e. subjugated (or junior) stock.

RISK PROFILE

c 3. A plot showing how the value of a firm is affected by changes in prices or rates is called a:
   a. security market line.
   b. net present value profile.
   c. risk profile.
   d. scatter plot.
   e. return grid.

TRANSACTIONS EXPOSURE

d 4. Short-run financial risk arising from the need to buy or sell at uncertain prices or rates in the near future is called:
   a. risk maximization.
   b. volatility maximization.
   c. economic exposure.
   d. transactions exposure.
   e. translation exposure.

ECONOMIC EXPOSURE

c 5. Long-term financial risk arising from permanent changes in prices or other economic fundamentals is called:
   a. risk maximization.
   b. volatility maximization.
   c. economic exposure.
   d. transactions exposure.
   e. translation exposure.

FORWARD CONTRACT

a 6. A(n) _____ contract is a legally binding agreement between two parties calling for the sale of an asset or product in the future at a price agreed upon today.
   a. forward
   b. spot
   c. swap
   d. option
   e. floating

PAYOFF PROFILE

b 7. A plot showing the gains and losses that will occur on a contract as the result of unexpected price changes is called a:
   a. risk profile.
   b. payoff profile.
   c. security market line.
   d. scatter plot.
   e. normal distribution.

FUTURES CONTRACT

e 8. A forward contract with the feature that gains and losses are realized each day rather than only on the settlement date, is called a(n) _____ contract.
   a. floating
   b. spot
   c. option
   d. swap
   e. futures

CROSS-HEDGING

d 9. Hedging an asset with contracts written on a closely related, but not identical, asset is called:
   a. primary trading.
   b. open trading.
   c. open-hedging.
   d. cross-hedging.
   e. perfect-hedging.

SWAP CONTRACT

e 10. An agreement by two parties to exchange specified cash flows at specified intervals in the future is called a(n) _____ contract.
   a. floating
   b. spot
   c. option
   d. futures
   e. swap

OPTION CONTRACT

a 11. An agreement that gives the owner the right, but not the obligation, to buy or sell a specific asset at a specific price for a set period of time is called a(n) _____ contract.
   a. option
   b. forward
   c. futures
   d. swap
   e. spot

CALL OPTION

b 12. An option that gives the owner the right, but not the obligation, to buy an asset is called a _____ option.
   a. parity
   b. call
   c. put
   d. straddle
   e. strangle

PUT OPTION

c 13. An option that gives the owner the right, but not the obligation, to sell an asset is called a _____ option.
   a. parity
   b. call
   c. put
   d. straddle
   e. strangle

INTEREST RATE CAP

d 14. A call option on an interest rate is called an interest rate:
   a. spread.
   b. swap.
   c. collar.
   d. cap.
   e. floor.

INTEREST RATE FLOOR

e 15. A put option on an interest rate is called an interest rate:
   a. spread.
   b. swap.
   c. collar.
   d. cap.
   e. floor.

II. CONCEPTS

INTEREST RATE VOLATILITY

a 16. Interest rate volatility:
- I. affects the borrowing costs of a firm.
- II. has decreased in the U.S. since 1979 because of a policy change by the Federal Reserve.
- III. creates a need for financial engineering.
- IV. decreases uncertainty about the future.

a. I and III only
b. II and IV only
c. II and III only
d. I, II, and III only
e. I, III, and IV only

INTEREST RATE VOLATILITY

b 17. A strong argument can be made that the collapse of the savings and loan industry began when:
a. the inflation rates in the U.S. began rising rapidly.
b. the volatility of interest rates increased significantly.
c. fluctuating commodity prices became the norm.
d. the Bretton Woods accord became effective.
e. the Federal Reserve began controlling the market rate of interest.

EXCHANGE RATE VOLATILITY

c 18. The breakdown of the Bretton Woods accord caused _____ volatility to increase.
a. interest rate
b. inflation rate
c. exchange rate
d. commodity price
e. option price

DERIVATIVES USAGE

e 19. According to the section in the textbook entitled "Charles W. Smithson on Who Uses What", the two primary reasons firms utilize derivative securities is to manage _____ and _____ exposures.
a. inflation rate; interest rate
b. foreign exchange rate; stock market
c. profit margin; inflation rate
d. commodity price; stock market
e. interest rate; foreign exchange rate

FINANCIAL RISK MANAGEMENT

d 20. The goal of financial risk management as it relates to hedging is to:
a. increase risk with the hope of earning higher returns.
b. totally eliminate all forms of risk.
c. totally eliminate financial risk.
d. reduce risk to a tolerable level.
e. increase the steepness of the risk profile.

FINANCIAL RISK MANAGEMENT

c 21. A combination between which two of the following firms is most apt to reduce each firm's financial risk exposure?
   a. citrus grower with another citrus grower
   b. oil producer with another oil producer
   c. clothing manufacturer with a cotton farmer
   d. cereal maker with a cotton farmer
   e. a shirt manufacturer with a pants manufacturer

SHORT-RUN FINANCIAL RISK

c 22. Which of the following statements are correct concerning a firm's short-run financial risk?
   I. Natural disasters are one cause of short-run financial risk.
   II. A financially sound firm can become financially distressed as the result of their short-run exposure to financial risk.
   III. Each segment of a business should be responsible for hedging their division's short-run financial risk.
   IV. Business owners can not reduce, either directly or indirectly, their short-run exposure to changes in their cash flows.
   a. I and III only
   b. II and IV only
   c. I and II only
   d. I, II, and III only
   e. I, II, III, and IV

LONG-RUN FINANCIAL RISK

d 23. Long-run financial risk:
   a. includes conditions such as low grain prices in a particular year.
   b. is easier to hedge over time than short-run financial risk.
   c. is related more to near-term transactions than to advancements in technology.
   d. generally results from changes in the underlying economics of a business.
   e. can generally be hedged such that the financial viability of a firm is protected.

FORWARD CONTRACTS

e 24. The buyer of a forward contract:
   a. is obligated to make delivery and pay the forward price.
   b. has the option of taking delivery and paying the lesser of the spot market price or the contract price.
   c. has the option of making delivery and receiving the higher of the spot market price or the contract price.
   d. is obligated to take delivery and pays the lower of the spot market price or the contract price.
   e. is obligated to take delivery and pay the forward price.

FORWARD CONTRACTS

a 25. A farmer generally enters into a forward contract as a:
   a. hedger.
   b. speculator.
   c. spot trader.
   d. broker.
   e. spectator.

FORWARD CONTRACTS

e 26. A forward contract:
   a. requires that payment in full be made when the contract is initially written.
   b. has a settlement price that fluctuates with daily movements in the marketplace.
   c. has a daily resettlement feature.
   d. provides options to, but does not obligate, the buyer or the seller.
   e. is a zero-sum game.

FUTURES CONTRACTS

d 27. Gains and losses on futures contracts are realized:
   a. only on the settlement day.
   b. if the contract is exercised, otherwise, they are never realized.
   c. only if the buyer finds it profitability to exercise the contract.
   d. on a daily basis through a process known as marking-to-market.
   e. only at the time the contracts mature.

SWAP CONTRACTS

c 28. Your firm currently has all fixed-rate debt. You would like to convert part of this to floating-rate debt. You should consider a(n):
   a. option on floating-rate bonds.
   b. forward contract on U.S. Treasury bills.
   c. interest rate swap.
   d. currency swap.
   e. interest rate call option.

SWAP CONTRACTS

c 29. An interest rate swap:
   I. should be beneficial to both parties to the contract.
   II. is often used in conjunction with a currency swap.
   III. is theoretically appealing but rarely used in actual practice.
   IV. can be used to change the index which underlies the variable rate on a firm's debt.
   a. I and III only
   b. II and IV only
   c. I, II, and IV only
   d. I, III, and IV only
   e. I, II, III, and IV

SWAP CONTRACTS

e 30 A swap contract:
- I. can be based on currencies, interest rates, or commodities.
- II. is traded on NASDAQ.
- III. consists of a series of forward contracts.
- IV. is normally established through a swap dealer.

a. I and III only
b. II and IV only
c. II and III only
d. I, II, and III only
e. I, III, and IV only

OPTION CONTRACTS

c 31. A call option contract:
a. obligates both the buyer and the seller.
b. obligates the buyer but not the seller.
c. grants rights to the buyer and obligates the seller.
d. grants rights to the seller and obligates the buyer.
e. grants rights to both the buyer and the seller but does not obligate either party.

OPTION CONTRACTS

b 32. The buyer of an option contract:
a. receives the option premium in exchange for an obligation to either buy or sell an underlying asset.
b. pays an option premium in exchange for a right to buy or sell an underlying asset during a specified period of time.
c. pays the strike price at the time the option is purchased and in exchange receives the right to exercise the option at a time of their choosing.
d. receives the option premium in exchange for guaranteeing the purchase or sale of an underlying asset if called upon to do so.
e. pays the option premium in exchange for receiving the strike price at a later date.

OPTION CONTRACTS

e 33. An option contract can be:
- I. used to hedge risk.
- II. used to speculate in the market.
- III. based on a futures contract to create a futures option.
- IV. based on a foreign currency.

a. II and III only
b. I and II only
c. I, III, and IV only
d. II, III, and IV only
e. I, II, III, and IV

OPTION CONTRACTS

e 34. You can buy an option contract on:
- I. exchange rates.
- II. another option.
- III. a swap contract.
- IV. interest rates.

a. III and IV only
b. I and II only
c. I, III, and IV only
d. I, II, and III only
e. I, II, III, and IV

FUTURES EXCHANGES

e 35. Which of the following are futures exchanges?
- I. New York Mercantile Exchange
- II. London International Financial Futures and Options Exchange
- III. Chicago Mercantile Exchange
- IV. Chicago Board of Trade

a. I and III only
b. II and IV only
c. I, II, and III only
d. I, II, and IV only
e. I, II, III, and IV

INTEREST RATE CAP

c 36. A firm with a variable-rate loan can purchase an interest rate_____ to protect itself from increases in interest rates.
a. floor
b. wall
c. cap
d. hat
e. cloak

INTEREST RATE COLLAR

e 37. If you have a _____ rate loan and you felt that interest rates are going to _____, you should consider purchasing an interest rate collar.
a. fixed; rise
b. fixed; fall
c. variable; rise
d. variable; fall
e. variable; change but you don't know the direction of the change

CALL OPTION

a 38. Which one of the following actions would provide you with the right, but not the obligation, to purchase the underlying asset during a specified period of time?
a. the purchase of a call option
b. the sale of a call option
c. the purchase of a put option
d. the purchase of a call option
e. the swap of a put option

HEDGE

e 39. If you can create a perfect hedge, then you:
   a. are guaranteed to profit if interest rates rise.
   b. are guaranteed to profit if prices rise.
   c. risk losing your profit if prices fall.
   d. risk losing your profit if interest rates fall.
   e. will not profit nor lose if prices rise.

OPTION CONTRACT

b 40. Which one of the following obligates the seller to buy an asset for a specified price but only if the contract is exercised?
   a. call option
   b. put option
   c. swap contract
   d. rate collar
   e. futures contract

FORWARD VS. FUTURES CONTRACT

c 41. The difference between a forward contract and a futures contract is:
   a. the fact that the futures contract does not obligate the buyer while the forward contract does.
   b. the fact that a forward contract must be paid in full at the onset while the futures contract does not.
   c. the daily resettlement feature found in futures contracts but not in forward contracts.
   d. the fact that a futures contract is a form of an option contract and a forward contract is not.
   e. the fact that the forward contract is marked-to-the-market and the futures contract is not.

PAYOFF PROFILE

c 42. A payoff profile helps:
   a. determine the price of an option contract.
   b. determine whether a forward or a futures contract is needed.
   c. demonstrate the effect of a hedge.
   d. determine the price of a collar.
   e. demonstrate the effects of a swap.

FUTURES PRICE

b 43. Given the following information, what is the price per troy ounce that will be used for today's marking-to-market for the July silver contract?

Silver – 5,000 troy oz.: cnts per troy oz.

	Open	High	Low	Settle	Chg	Lifetime High	Lifetime Low	Open Interest
Jul	597.1	613.1	597.0	610.0	13.4	848.3	434.6	1259
Sep	597.3	614.2	596.9	611.7	13.3	830.1	475.8	21,258

a. $5.97
b. $6.10
c. $61.00
d. $61.17
e. $610.00

FUTURES PRICE

a 44. What is the highest price per troy ounce that the September futures contract on silver has traded?

Silver – 5,000 troy oz.: cnts per troy oz.

	Open	High	Low	Settle	Chg	Lifetime High	Lifetime Low	Open Interest
Jul	597.1	613.1	597.0	610.0	13.4	848.3	434.6	1,259
Sep	597.3	614.2	596.9	611.7	13.3	830.1	475.8	21,258

a. $8.301
b. $8.483
c. $83.01
d. $84.83
e. $848.30

FUTURES OPTIONS

c 45. What is the option premium per ounce on the May 430 put contract on gold given the following price quotes?

Gold – 100 troy ounces; $ per troy ounce

Price	Call Apr	Call May	Call Jun	Put Apr	Put May	Put Jun
425	6.30	10.60	13.90	2.80	5.80	9.70
430	3.80	8.30	11.20	5.10	9.30	12.20

a. $5.80
b. $8.30
c. $9.30
d. $10.60
e. $12.20

INTEREST RATE SWAP

b 46. Company A can borrow money at a fixed rate of 9 percent or a variable rate set at prime plus 1 percent. Company B can borrow money at a variable rate of prime plus 2 percent or a fixed rate of 8.25 percent. Company A prefers a fixed rate and company B prefers a variable rate. Given this information, which one of the following statements is correct?

a. Company A can swap with B and pay a fixed rate of 8 percent.
b. If Company A swaps with B, Company A should end up paying a fixed rate between 8¼ percent and 9 percent.
c. If Company B swaps with Company A then Company B will end up paying a fixed rate of 8 percent.
d. Company B can swap with Company A such that Company B receives a 9¼ percent fixed rate.
e. There are no terms under which both Company A and Company B can swap interest rates and both realize a profit.

INTEREST RATE SWAP

d 47. The Baker Co. can borrow money at either a fixed rate of 7 percent or a variable rate set at prime plus 0.5 percent. The Costco Co. can borrow money at either a variable rate of prime plus 1 percent or a fixed rate of 7.5 percent. The Baker Co. prefers a fixed rate and the Costco Co. prefers a variable rate. Given this information, which one of the following statements is correct?

a. After a swap with Baker Co., Costco should end up paying a fixed rate of about 7.25 percent.
b. Costco should end up paying no more than the prime rate on their debt if they do an interest rate swap with the Baker Co.
c. Both firms will profit if they swap a 7.25 percent fixed rate for a prime plus 1 percent variable rate.
d. The Baker Co. will end up paying no less than 7 percent and no more than 7.5 percent as a fixed rate after a swap with Costco.
e. The Baker Co. and the Costco Co. can not swap interest rates in a manner that will be profitable for both firms.

INTEREST RATE SWAP

e 48. The Smith Co. can borrow money at a fixed rate of 9.25 percent or a variable rate set at prime plus 1.5 percent. The Tanner Co. can borrow money at a variable rate of prime plus 1 percent or a fixed rate of 9 percent. The Smith Co. prefers a fixed rate and the Tanner Co. prefers a variable rate. Given this information, which one of the following statements is correct?

a. After swapping interest rates with the Tanner Co., the Smith Co. will end up paying about 1.25 percent over prime on their borrowed funds.
b. Both companies can profit in a swap which will allow the Smith Co. to pay between 9 and 9.25 percent as a fixed rate.
c. The Tanner Co. will end up with a fixed rate of 9.25 percent.
d. The Tanner Co. has the best chance of profiting if they do an interest rate swap with the Smith Co.
e. There are no terms under which the Smith Co. and the Tanner Co. can swap interest rates and each realize a profit.

III. PROBLEMS

CONTRACT VALUE

d 49. What is the closing value on this day for one September futures contract on silver?

Silver – 5,000 troy oz.: cnts per troy oz.

	Open	High	Low	Settle	Chg	Lifetime High	Lifetime Low	Open Interest
Jul	597.1	613.1	597.0	610.0	13.4	848.3	434.6	1,259
Sep	597.3	614.2	596.9	611.7	13.3	830.1	475.8	21,258

a. $29,845
b. $29,865
c. $30,500
d. $30,585
e. $30,710

CONTRACT VALUE

b 50. You own five July futures contracts on silver. What is the total value of your position as of the end of this day's trading?

Silver – 5,000 troy oz.: cnts per troy oz.

	Open	High	Low	Settle	Chg	Lifetime High	Lifetime Low	Open Interest
Jul	597.1	613.1	597.0	610.0	13.4	848.3	434.6	1,259
Sep	597.3	614.2	596.9	611.7	13.3	830.1	475.8	21,258

a. $149,275
b. $152,500
c. $152,925
d. $305,000
e. $305,850

CONTRACT VALUE

c 51. What is the closing value on this day for one March futures contract on milk?

Milk – 200,000 lbs.: cents per lb.

	Open	High	Low	Settle	Chg	Lifetime High	Lifetime Low	Open Interest
Mar	12.53	12.79	12.33	12.78	.01	12.86	12.19	503

a. $24,660
b. $25,060
c. $25,560
d. $25,580
e. $25,720

CONTRACT PROFIT/LOSS

b 52. You purchased three July futures contracts on silver when the price quote was 713.2. Given today's prices as shown in the table, your total profit (loss) to date is:

Silver – 5,000 troy oz.: cnts per troy oz.

	Open	High	Low	Settle	Chg	Lifetime High	Lifetime Low	Open Interest
Jul	597.1	613.1	597.0	610.0	13.4	848.3	434.6	1,259
Sep	597.3	614.2	596.9	611.7	13.3	830.1	475.8	21,258

a. -$51,600
b. -$15,480
c. -$5,160
d. -$310
e. -$155

CONTRACT PROFIT/LOSS

e 53. You purchased two July futures contracts on silver when the price quote was 529.6. Given today's prices as shown in the table, you have a total profit (loss) to date of:

Silver – 5,000 troy oz.: cnts per troy oz.

	Open	High	Low	Settle	Chg	Lifetime High	Lifetime Low	Open Interest
Jul	597.1	613.1	597.0	610.0	13.4	848.3	434.6	1,259
Sep	597.3	614.2	596.9	611.7	13.3	830.1	475.8	21,258

a. $804
b. $2,804
c. $4,020
d. $4,804
e. $8,040

CONTRACT PROFIT/LOSS

e 54. You speculate in the market by selling 15 gold futures contracts when the futures price is $418.23 per ounce. The price on the contract maturity date is $397.62. What is your total profit (loss) if the contract size is 100 ounces?

a. $206
b. $309
c. $2,061
d. $20,610
e. $30,915

FUTURES HEDGE

b 55. You expect to deliver 400,000 pounds of milk to the market in March. Today, you hedge your position at the closing price as shown in the table. Assume that the market price turns out to be 12.89 at the time you make your delivery in March. How much income did you receive in total from the hedged delivery of your milk?

Milk – 200,000 lbs.: cents per lb.

	Open	High	Low	Settle	Chg	Lifetime High	Lifetime Low	Open Interest
Mar	12.53	12.79	12.33	12.78	.01	12.86	12.19	503

a. $50,120
b. $51,120
c. $51,160
d. $51,320
e. $51,560

FUTURES HEDGE

a 56. You are the buyer for a cereal company. You think you will need 230,000 bushels of corn next month. The futures contracts on corn are based on 5,000 bushels and are currently quoted at 261.60 cents per bushel for delivery next month. If you want to hedge your cost risk, you should _____ contracts at a current value of _____ per contract.

a. buy 46; $13,080
b. buy 230; $60,168
c. sell 46; $601,680
d. sell 230; $13,080,000
e. sell 46; $60,168,000

FUTURES HEDGE

a 57. You are a jewelry maker. Every July you need to purchase 10,000 troy ounces of silver to cover your production needs. Today you hedged your position at what turned out to be the lowest price for the day. Assume that the actual price per troy ounce of silver is 605.0 at time you need the silver in July. How much more would you have spent or saved if you had not hedged your position?

Silver – 5,000 troy oz.: cnts per troy oz.

	Open	High	Low	Settle	Chg	Lifetime High	Lifetime Low	Open Interest
Jul	597.1	613.1	597.0	610.0	13.4	848.3	434.6	1,259
Sep	597.3	614.2	596.9	611.7	13.3	830.1	475.8	21,258

a. You saved $800.
b. You spent an extra $800.
c. You saved $8,000.
d. You spent an extra $8,000
e. You saved $80,000.

FUTURES HEDGE

b 58. You are the purchasing agent for a candy company. You anticipate that your firm will need 400,000 pounds of milk in March. You decide to hedge your position today and did so at the closing price of the day. Assume that the actual market price turns out to be 12.74 on the day you actually buy the milk. How much more would you have spent or saved if you had not taken the hedge position?

Milk – 200,000 lbs.: cents per lb.

	Open	High	Low	Settle	Chg	Lifetime High	Lifetime Low	Open Interest
Mar	12.53	12.79	12.33	12.78	.01	12.86	12.19	503

a. You could have saved $160.
b. You spent an extra $160.
c. You could have saved $840.
d. You spent an extra $840.
e. You spent an extra $1,640.

FUTURES OPTIONS

d 59. You are a jewelry maker and purchase two June 425 calls on gold. What is the total price you will pay to acquire this gold? Ignore transaction costs.

Gold – 100 troy ounces; $ per troy ounce

Price	Call Apr	Call May	Call Jun	Put Apr	Put May	Put Jun
425	6.30	10.60	13.90	2.80	5.80	9.70
430	3.80	8.30	11.20	5.10	9.30	12.20

a. $82,220
b. $83,760
c. $85,000
d. $87,780
e. $88,240

FUTURES OPTIONS

a 60. You own a small gold mine in Alaska. You expect to deliver 400 ounces of gold to the market in April. If you buy 430 puts to cover your position, how much will you receive in total for your 400 ounces of gold? Ignore transaction costs.

Gold – 100 troy ounces; $ per troy ounce

Price	Call Apr	Call May	Call Jun	Put Apr	Put May	Put Jun
425	6.30	10.60	13.90	2.80	5.80	9.70
430	3.80	8.30	11.20	5.10	9.30	12.20

a. $169,960
b. $172,000
c. $173,520
d. $174,040
e. $182,707

IV. ESSAYS

DERIVATIVES

61. What is the difference between hedging and speculating? In other words, what are hedgers trying to accomplish? What are speculators trying to accomplish? If a farmer who expects to harvest 40,000 bushels of wheat sells wheat futures, is he hedging or speculating? Explain.

The key is whether or not the contracting party has an existing position in the underlying asset that he or she wishes to offset. Obviously, the farmer in the question is a hedger and not a speculator. However, a farmer can, and sometimes does, speculate over and above his or her commodity risk. Good students will recognize that hedgers contract in order to reduce risk while speculators seek risk with the expectation of earning sizeable returns.

HEDGING WITH DERIVATIVES

62. Explain how a manufacturer who has an ongoing need for silver as a raw material in their production process might use futures to hedge. What does the manufacturer hope to gain?

The manufacturer needs to acquire silver so they might purchase silver futures to offset higher production costs should silver prices rise in the spot commodity market. Since there is an ongoing need, it is likely the manufacturer will maintain a continuous position in the silver futures market. The firm in this case hopes to insulate itself from fluctuations in the price of silver, thereby maintaining a more predictable stream of production cost cash outflows.

CROSS HEDGING

63. What is cross hedging? Why do you suppose firms use this method of risk management? What are some of the drawbacks?

    Cross hedging is hedging an asset with contracts written on a closely related, but not identical, asset. Firms probably engage in cross hedging because they can't find a perfect match for the commodity item or financial asset whose risk they are seeking to manage. The source of the imperfect match could be grading, timing, or quantity mismatches, or one of several other factors. The primary drawback of a cross-hedge is that since it is, by definition, an imperfect match, not all of the firm's risk will be eliminated.

INTEREST RATE SWAPS

64. A bank sells a certificate of deposit (CD) for $10 million. This CD obligates the bank to pay a floating rate of interest equal to the bank's prime rate for the next 5 years. At the same time, the bank makes a $10 million mortgage loan that requires the borrower to pay a fixed 9 percent rate of interest for the same 5 year period. Suppose the bank prefers to receive floating rate income and pay fixed rate costs. Also assume the bank wishes to earn the prime rate plus 3 percent even if interest rates fluctuate over the next 5 years. Construct a swap with a single counterparty to satisfy the bank. Be sure to make the directions of the cash flows clear. You can ignore transaction costs.

    The bank receives 9 percent fixed rate and pays the floating rate based on the prime rate for 5 years. The bank can enter into a swap paying 9 percent fixed to the counterparty and receiving in exchange a floating rate based on prime plus 3 percent for 5 years. In this case, the bank collects the 9 percent payments from the borrower and passes them on to the counterparty. The bank receives the floating rate of prime plus 3 percent and then pays the prime rate to the depositor. The bank has locked in a rate of 3 percent on the swap.

SWAPS AND FORWARDS

65. Explain why a swap is effectively a series of forward contracts.

    In a forward contract, the parties agree at the outset to a specified transaction at some point in the future at a predetermined price. In a swap, the parties agree to several future transactions at predetermined prices. Thus, each transaction specified by the swap contract is essentially a forward contract.