Chapter 17

Risk Management

Answers to Concept Review Questions

1. Recently, a U.S. senator described the markets for derivative securities as an electronic pyramid scheme. How do you respond?

   Derivative securities can be very risky, and they can be used for speculative purposes. However, derivatives can also be used to hedge various risk exposures, and in that sense they are more like insurance than a pyramid scheme.

2. What does it mean to say that by not hedging, a firm is speculating on changes in the risk factor?

   When a firm chooses not to hedge, it accepts the risk that an underlying risk factor may move in either a favorable or unfavorable manner. In choosing not to hedge, the firm chooses to accept this risk.

3. If Equation 17.2 does not hold, how might an arbitrageur earn a riskless profit?

   If equation 17.2 does not hold, then the forward price, \( F \), is either higher or lower than the right-hand side. If \( F \) is higher, then the forward price is “too high” in some sense, so a trader could buy the asset in the spot market and sell it in the forward market to earn a profit. If \( F \) is “too low,” then a trader would take a short position in the spot market and cover that exposure with a long position in the forward market.

4. What is the difference in the timing of cash flows in a forward contract and a spot market transaction?

   With a spot market transaction, the buyer pays cash immediately and receives the underlying asset. With a forward transaction, no cash changes hands immediately. At some point in the future, the buyer pays cash to the seller and takes delivery of the underlying asset.

5. What is the difference in the cash flows for a forward contract and a futures contract?

   With a futures contract, a trader must post some initial margin. As the futures price changes each day, the trader’s position is marked to market, meaning that money flows into the margin account when the trader’s position increases in value, and money flows out if the position decreases in value. With a forward contract, cash only changes hands at the end of the contract.

6. What features of a futures contract tend to reduce default risk?

   Margin requirements and daily marking to market reduce the probability of default in a futures contract.
7. Describe how an interest rate swap is just a portfolio of FRAs.

An interest rate swap is just a sequence of payments through time where the payments depend on the difference between a fixed and a floating interest rate. A single forward rate agreement is one payment that is based on the difference between two interest rates, so a sequence of forward rate agreements spread over time is similar to a swap.

8. Why would any corporation hedge with forwards, futures, or swaps if it can keep its upside potential by hedging with options?

Hedging with options does preserve some upside potential, but it is expensive because the firm has to purchase the options by paying the option premium. With futures, forwards, and swaps, no cash is required up front (except for margin requirements with futures).

9. Under what circumstances might a corporation prefer a financially engineered solution for a risk-management problem to an off-the-shelf solution?

A firm might prefer an engineered solution with the off-the-shelf solutions do not precisely match the firm’s risk exposure.

Answers to Self-Test Problems

ST17-1. A certain commodity sells for $150 today. The present value of the cost of storing this commodity for one year is $10. The risk-free rate is 4 percent. What is a fair price for a one-year forward contract on this asset?

Use equation 17.2 to solve this problem. 

\[ F = (150 + 10)(1.04) = 166.40 \]

ST17-2. The spot exchange rate is $1.6666/£. The risk-free rate is 4 percent in the U.S. and 6 percent in the U.K. What is the forward exchange rate (assume a 1-year contract)?

Use equation 17.3 here, but remember that we need to express the exchange rates in terms of foreign currency per unit of domestic currency. If we treat the $ as the domestic currency, then the spot rate is 1/($1.6666/£) or £0.6000/$. So we have

\[ F = 0.6000(1.06)/1.04 = 0.6115. \]