CHAPTER 1: INTRODUCTION

END-OF-CHAPTER QUESTIONS AND PROBLEMS

1. (**Market Efficiency and Theoretical Fair Value**) An efficient market is one in which prices reflect the true economic values of the assets trading therein. In efficient markets, no one can earn returns that are more than commensurate with the level of risk. Efficient markets are characterized by low transaction costs and by the rapid rate at which new information is incorporated into prices.

2. (**Arbitrage and the Law of One Price**) Arbitrage is a type of investment transaction that seeks to profit when identical goods are priced differently. Buying an item at one price and immediately selling it at another is a type of arbitrage. Because of the combined activities of arbitrageurs, identical goods, primarily financial assets, cannot sell for different prices for long. This is the law of one price. Arbitrage helps make our markets efficient by assuring that prices are in line with what they are supposed to be. In short, we cannot get something for nothing. A situation involving two identical goods or portfolios that are not priced equivalently would be exploited by arbitrageurs until their prices were equal. The "one price" that an asset must be is called the “theoretical fair value.”

3. (**Arbitrage and the Law of One Price**) The law of one price is violated if the same good is selling at different prices. On the surface it may appear as if that is the case; however, it is important to look beneath the surface to determine if the goods are identical. Part of the cost of the good is convenience and customer service. Some consumers might be willing to pay more because the dealer is located in a more desirable section of town. Also, the higher priced dealer may have a better reputation for service and customer satisfaction. Buyers may be willing to pay more if they feel that the premium they pay helps assure them that they are getting a fair deal. It is important to note that many goods are indeed identical and, if so, they should sell at the same price, but the Law of One Price is not violated if the price differential accounts for some economic value.

4. (**The Storage Mechanism**) Storage is simply holding the asset. Some assets, like commodities, require considerable storage space and entail significant storage costs. Others, like stocks and bonds, do not consume much space but, as we shall see later, do incur costs. Storage enables us to more adequately meet our consumption needs and, thus, provides for a more efficient alteration of our consumption patterns across time. For example, we can store grains for the winter. In the case of stocks and bonds, we can store them and sell them later. The proceeds from the sale of the securities can be used to meet consumption needs at the later time. Likewise, storage enables speculators to hold goods and securities in the hope of selling them later at a profit. In addition, storage plays an important role in defining the relationship between spot instruments and derivatives.

5. (**Delivery and Settlement**) In futures markets, delivery seldom occurs. Since delivery is always possible, however, an expiring futures contract will be priced like the spot instrument. The knowledge that futures prices will eventually converge to spot prices is important to the pricing of futures contracts.

6. (**The Role of Derivative Markets**) Derivative markets provide a means of adjusting the risk of spot market investments to a more acceptable level and identifying the consensus market beliefs. They make trading easier and less costly and spot markets more efficient. These markets also provide a means of speculating.

7. (**Criticisms of Derivatives Markets**) On the surface, it may be difficult to distinguish speculation from gambling. Both entail high risk with the expectation of high gain. The major difference that makes speculation somewhat more socially acceptable is that it offers benefits to society not conveyed by gambling. For example, speculators are necessary to assume the risk not wanted by others. In gambling, there is no risk being hedged. Gamblers simply accept risk without there being a concomitant reduction in someone else's risk.

8. (**Misuses of Derivatives**) Derivatives can be misused by speculating when one should be hedging, by not having acquired the requisite knowledge to use them properly by acting irresponsibly when using derivatives such as by being overly confident of one's ability to forecast the direction of the market.

9. (**The Role of Derivative Markets**) The existence of derivative markets in the United States economy and indeed throughout most modern countries of the world undoubtedly leads to a much higher degree of market efficiency. Derivatives facilitate the activities of individual arbitrageurs so that unequal prices of identical goods are arbitraged until they are equal. Because of the large number of arbitrageurs, this is a quick and efficient process. Arbitrage on this large a scale makes markets less capable of being manipulated, less costly to trade in, and therefore more attractive to investors. (The opportunity to hedge also makes the markets more attractive to investors in managing risk.) This is not to say that an economy without derivative markets would be inefficient, but it would not have the advantage of this arbitrage on a large scale.

   It is important to note that the derivative markets do not necessarily make the U.S. or world economy any larger or wealthier. The basic wealth, expected returns, and risks of the economy would be about the same without these markets. Derivatives simply create lower cost opportunities for investors to align their risks at more satisfactory levels. This may not necessarily make them wealthier, but to the extent that it makes them more satisfied with their positions, it serves a valuable purpose.

10. (**Return and Risk**) **Return** is the numerical measure of investment performance. There are two main measures of return, dollar return and percentage return. **Dollar return** measures investment performance as total dollar profit or loss. For example, the dollar return for stocks is the dollar profit from the change in stock price plus any cash dividends paid. It represents the absolute performance. **Percentage return** measures investment performance per dollar invested. It represents the percentage increase in the investor's wealth that results from making the investment. In the case of stocks, the return is the percentage change in price plus the dividend yield. The concept of return also applies to options, but, as we shall see later, the definition of the return on a futures or forward contract is somewhat unclear.

11. (**Repurchase Agreements**) A **repurchase agreement** (known as **repos**) is a legal contract between a seller and a buyer, the seller agrees to sell a specified asset to the buyer currently as well as buy it back usually at a specified time in the future at an agreed future price. The seller is effectively borrowing money from the buyer at an implied interest rate. Typically, repos involve low risk securities, such as U. S. Treasury bills. Repos are useful because they provide a great deal of flexibility to both the borrower and lender.

    Derivatives traders often need to be able to borrow and lend money in the most cost-effective manner possible. Repos are often a very low cost way of borrowing money, particularly if the firm holds government securities. Repos are a way to earn interest on short-term funds with minimal risk (for buyers) and repos are a way to borrow for short-term needs at a relatively low cost (for sellers).

12. (**Derivative Markets and Instruments**) An option is a contract between two parties—a buyer and a seller—that gives the buyer the right, but not the obligation, to purchase or sell something at a later date at a price agreed upon today. The option buyer pays the seller a sum of money called the price or premium. The option seller stands ready to sell or buy according to the contract terms if and when the buyer so desires. An option to buy something is referred to as a call**;** an option to sell something is called a put**.**

    A forward contract is a contract between two parties—a buyer and a seller—to purchase or sell something at a later date at a price agreed upon today. A forward contract sounds a lot like an option, but an option carries the right, not the obligation, to go through with the transaction. If the price of the underlying good changes, the option holder may decide to forgo buying or selling at the fixed price. On the other hand, the two parties in a forward contract incur the obligation to ultimately buy and sell the good.

13. (**The Underlying Asset**) Because all derivatives are based on the random performance of something, the word "derivative" is appropriate. The derivative derives its value from the performance of something else. That "something else" is often referred to as the underlying asset. The term underlying asset, however, is somewhat confusing and misleading. For instance, the underlying asset might be a stock, bond, currency, or commodity, all of which are assets. However, the underlying "asset" might also be some other random element such as the weather, which is not an asset. It might even be another derivative, such as a futures contract or an option.