

CHAPTER 7: THE STRUCTURE OF FORWARD AND FUTURES MARKETS

END-OF-CHAPTER QUESTIONS AND PROBLEMS

1. A forward contract obligates the holder of the long position to purchase the commodity at a future date. A call option grants the holder of the call the right but not the obligation to purchase the commodity at a future date. A put option grants the holder of the put the right but not the obligation to sell the commodity at a future date. A call is more like a forward contract than a put because long positions in the two contracts are bullish. However, the holder of the forward contract is obligated to buy the good at the future date. The holder of the call can simply let the option expire if the market price of the commodity is less than the exercise price. A call holder pays a premium for the right to not exercise. The holder of a long forward contract does not pay a premium and gives up the right to not exercise.

2. While both forward and futures contracts are agreements to purchase a good at a future date, a futures contract provides liquidity by having a central marketplace and standardized contract terms. This allows holders of futures contracts to sell them in the market at any time prior to expiration. Futures trading is governed by the formal regulations of the futures exchange. Most important, the losses incurred by futures traders are guaranteed by the clearinghouse, which requires the daily settlement of gains and losses. That is, the holders of profitable contracts do not have to worry about whether their gains will be paid by the holders of losing contracts. Forward contracts, however, are subject to default risk. Forward contracts can be tailored to the unique needs of firms. For example, a firm may need to execute a hedge in which the expiration is a specific date. Futures contracts expire only on certain dates, which may not fit the needs of the firm.

3.
 - a. Eurodollars
 - b. Crude oil
 - c. Corn

4.

	A:	1,000	OL:	4,200	S:	-5,200	
		A		OL		S	Change in Open Interest
a.		500		4,700		-5,200	none
b.		1,700		3,500		-5,200	none
c.		1,200		4,200		-5,400	increase by 200
d.		200		4,200		4,400	decrease by 800

If A trades with OL, one or the other is merely offsetting and, thus, open interest does not change. If A trades with the shorts, both are reducing or increasing their positions so open interest changes. In other words, if traders trade with others who hold the same positions, open interest will not change. If they trade with those holding opposite positions, open interest will change.

5.
 - a. A centralized trading facility. The exchange is a formal market place for trading the contracts.
 - b. Standardized terms. This establishes that certain contracts are identical and, thus, are perfect substitutes for each other.
 - c. Rules. The exchange establishes rules and regulations that permit trading to transpire in an orderly manner.
 - d. Clearinghouse. The clearinghouse associated with the exchange provides a guarantee that each party to the contract will perform as expected. The clearinghouse also provides the bookkeeping system that keeps track of the transactions and the margin deposits.
 - e. Contract development. The exchange continuously monitors economic conditions and develops new contracts designed to meet the changing needs of hedgers and speculators.

6. Locals are in business for themselves. They attempt to profit by buying at low prices and selling at high prices. In so doing, they provide liquidity to the public. Commission brokers simply execute transactions for other parties who do not have access to the trading floor. They make their income by the commissions they receive on each transaction. A futures commission merchant is a firm that solicits public orders. It may have a commission broker on the floor of the exchange or it may engage an independent broker to execute its trades.
7. An open outcry system involves traders on the floor of an exchange who call out bids and offers. On an electronic system, traders are off the floor of the exchange and communicate their bids and offers by a computer link. In addition some electronic systems actually have the computer match bids with offers.
8. Dual trading is when a trader on the floor of a futures (or option) exchange conducts trades both for himself or herself (as a dealer) and for others (as a broker). Say you hold a customer limit order to buy 10 contracts at 50, which means you must buy at 50 or less. The best offer is at 49. You buy 10 from the other trader at 49 and sell 10 to your customer at 50. Your customer got the price of 50 or less as required but could have gotten 49. You pocketed the difference. Also, knowing your customer was willing to buy at 50 means that instead of selling to your customer at 50, you could have held your contract in hopes of selling at an even better price. If you get a better price, you could take it and tell your customer that the order could not be executed at 50 or less. Of course, this is an unethical practice and violates exchange rules, but with the exception of a few recently enacted restrictions, dual trading per se is not illegal. The major benefit of dual trading is that it does add liquidity to the market.
9. If a position in the futures market is accompanied by an opposite position in the spot market, the transaction is a hedge. The hedger does not necessarily have to have a long or short position in the spot market. A hedge can be established if the hedger is reasonably certain of taking a future position in the spot market. The hedge protects against price changes in the interim period until the spot transaction is made. A speculative strategy is not normally accompanied by a transaction or contemplated transaction in the spot market.
10. A spread strategy is a long position in one futures contract and a short position in another futures contract. The prices of the two contracts are normally highly correlated so that the gains on one contract are at least partially offset by the losses on the other. The objective is to take a small amount of risk in the hope of a small profit. An arbitrage strategy involves a near riskless transaction in one or more futures contracts and possibly a spot transaction. Arbitrage trading is usually triggered by a deviation from the theoretical relationship between the prices of two instruments. Both transactions can be viewed as hedges. A hedge is a position in the spot market and an opposite position in the futures market. Thus, it is similar to a spread in that the gain on one position is at least partially offset by the loss on the other. Arbitrage is like hedging in that it is designed to have low risk and it often involves a position in the spot market and an opposite position in the futures market.
11. These three types of futures traders differ primarily in the length of time they hold their positions. Scalpers attempt to profit from small changes in the price of the contract. They hold their positions for very short time intervals, sometimes less than a minute. Day traders usually hold their positions for less than a day. Near the end of the trading day they close out their positions so that they have no open positions overnight. Position traders hold their transactions open for different lengths of time. This could be several days or weeks. They attempt to profit by capitalizing on trends that typically last longer than a day.
12. An individual can buy a full membership, which provides the right to go onto the trading floor and engage in futures transactions. Some exchanges also offer limited memberships which permit trading in certain contracts only. Alternatively, an individual can lease a seat from another individual already owning a seat.

13. Daily price limits determine the maximum and minimum price at which a contract can trade during a day. At the end of a given day, the settlement price plus or minus the daily price limit establishes the maximum and minimum prices for trades the following day. However, there are rules that relax the limits under certain conditions. The purpose of daily price limits is to prevent the margin accounts from being depleted so quickly that losses cannot be covered.
14. Circuit breakers are rules that restrict trading after prices have moved by a specified amount. They were instituted after the crash of 1987. They are designed to permit markets to "cool off" and, in some cases, additional margin to be collected. Generally, the idea is that by prohibiting panic trading, investors are encouraged to absorb and analyze information before trading, something they are supposed to do anyway. However, circuit breakers have the disadvantage of simply disguising the true equilibrium price and can actually induce more panic. If a building is on fire, locking the doors might reduce injuries due to trampling but would hardly put out the fire.
15. The clearinghouse intervenes in each contract, guaranteeing to the buyer that the seller's losses will be covered and guaranteeing to the seller that the buyer's losses will be covered. This allows a trader to enter into a transaction without having to check the creditworthiness of the other party. The clearinghouse requires that each trader maintain a margin account to cover losses. The clearinghouse also maintains a cash reserve to cover losses in the event of a failure to cover a loss by a trader or firm. As a last resort, the clearinghouse can assess the member firms a charge to make up any losses not already covered.
16. An offsetting trade means to simply take an opposite position in the same contract. For example, a trader who buys a gold futures contract can offset the trade by selling a gold futures contract with the same expiration month. This establishes a long and short position in the same contract, which is equivalent to not having a position at all. A cash settlement is permitted at expiration on certain contracts. The settlement price on the last day of trading is automatically equal to the spot price. The account is marked-to-market on the last day and all open positions are automatically closed. If the contract provides for delivery, the holder of the short position must deliver the commodity to the holder of the long position who pays the futures price on that day, subject to some adjustments provided in certain contracts. Forward contracts are designed to be held to expiration. The terms of the contract are written so as to accommodate delivery if that is the intention of the party. However, many forward contracts are cash settled at expiration. If the holder of a forward contract decides to terminate the position early, he would simply re-enter the forward market and request a new offsetting contract. While this is similar to offsetting a futures contract, the forward market may not necessarily have the same liquidity as it did when the contract was opened. While the contract can generally be offset, it may end up being very costly to offset. In addition since both contracts still exist, credit risk remains.

17.

Date	Settlement Price	Settlement Price (\$)	Mark-to-Market	Other Entries	Account Balance
7/1	453.95	226,975	850	9,000	9,850
7/2	454.50	227,250	275		10,125
7/3	452.00	226,000	-1,250		8,875
7/7	443.55	221,775	-4,225		4,650
7/8	441.65	220,825	-950	+4,350	8,050
7/9	442.85	221,425	600		8,650
7/10	444.15	222,075	650		9,300
7/11	442.25	221,125	-950		8,350
7/14	438.30	219,150	-1,975		6,375
7/15	435.05	217,525	-1,625		4,750
7/16	435.50	217,750	225	4,250	9,225

Explanation of Other Entries:

7/1: Initial margin deposit of \$9,000

7/8: Balance on 7/7 was \$4,650, which is below \$6,000 maintenance margin. Required to deposit \$4,350 to bring balance up to initial margin of \$9,000

7/16: Balance on 7/15 was \$4,750, which is below \$6,000 maintenance margin. Required to deposit \$4,250 to bring balance up to initial margin of \$9,000

18. The Commodity Futures Trading Commission (CFTC) is the federal agency that regulates futures markets. Its general responsibility is to enforce the various federal laws regulating futures trading. The CFTC evaluates and approves or denies new contract proposals, ensures that the exchanges make price information available, authorizes and licenses various individuals offering futures-related services to the public, monitors trading for evidence of manipulation, and assists in the resolution of complaints made by the public against individuals or firms in the industry.
19. The National Futures Association (NFA) is an industry self-regulatory organization. As such, it is a way for the industry to regulate itself rather than have the government do it. This takes some of the burden off of the CFTC and the taxpayers. The NFA is authorized to assume some of the regulatory responsibilities of the CFTC such as licensing individuals and resolving disputes.
20. a. $100 - 89.72 = 10.28$
 $100 - 10.28(90/360) = 97.43$
For a \$1,000,000 contract this is a price of \$974,300.
- b. $100 - 87.24 = 12.76$
 $100 - 12.76(90/360) = 96.81$
For a \$1,000,000 contract this is a price of \$968,100.

21. Any eligible bond cannot mature or be callable before March 1, 2013.
- no
 - yes
 - no
 - yes
 - no (callable in November, 2009)
22. On March 13 you notify the clearinghouse of your intention to make delivery. On March 14 the holder of the long position is notified that delivery will be made the next day. The invoice price is determined based on the settlement price on March 13. On March 15 delivery is made and the long pays the invoice. The invoice is based on a settlement price of 69-6/32 or 69.1875. The accrued interest is calculated on the basis of the number of days since the last coupon payment date, November 15, and the delivery date, March 15. This is 120. During the current six-month period between coupon payment dates, November 15 to May 15, there are 181 days. Thus, the accrued interest on \$100,000 face value of the bonds is

$$(120/181)(\$100,000)(.1125/2) = \$3,729.28$$

The invoice is

$$(\$100,000)(.691875)(1.3661) + \$3,729.28 = \$98,246.32$$

APPENDIX 7B SOLUTIONS

1. First year
 Price at year end = $422.40(\$500) = \$211,200$
 Taxable gain: $\$211,200 - \$205,150 = \$6,050$
 Tax: $(\$6,050)(.6)(.20) + (\$6,050)(.4)(.31) = \$1,476.20$
- Second year
 Price when sold: $427.30(\$500) = \$213,650$
 Taxable gain: $\$213,650 - \$211,200 = \$2,450$
 Tax: $(\$2,450)(.6)(.20) + (\$2,450)(.4)(.31) = \$597.80$
- Total tax on the transaction:
 $\$1,476.20 + \$597.80 = \$2,074$
2. First year
 Taxable gain: $\$10,500 - \$10,000 = \$500$
 Tax: $(\$500)(.6)(.20) + (\$500)(.4)(.31) = \$122$
- Second year
 It is assumed that you bought the commodity at the price at \$11,200. You would have to pay tax on the accrued profit since the end of the year.
- Taxable gain: $\$11,200 - \$10,500 = \$700$
 Tax: $(\$700)(.6)(.20) + (\$700)(.4)(.31) = \$170.80$
3. You would not pay tax on the commodity until it is sold.

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