

Solution key CH#22

CHAPTER 22: FUTURES MARKETS

PROBLEM SETS

2. The ability to buy on margin is one advantage of futures. Another is the ease with which one can alter one's holdings of the asset. This is especially important if one is dealing in commodities, for which the futures market is far more liquid than the spot market.

7. a. The closing futures price for the March contract was 1,108.60, which has a dollar value of:

$$\$250 \times 1,108.60 = \$277,150$$

Therefore, the required margin deposit is: \$27,715

b. The futures price increases by: $\$1,150.00 - 1,108.60 = \41.40

The credit to your margin account would be: $41.40 \times \$250 = \$10,350$

This is a percent gain of: $\$10,350/\$27,715 = 0.3734 = 37.34\%$

Note that the futures price itself increased by only 3.73%.

c. Following the reasoning in part (b), any change in F is magnified by a ratio of (1 /margin requirement). This is the leverage effect. The return will be -10%.

8. a. $F_0 = S_0(1 + r_f) = \$150 \times 1.03 = \154.50

b. $F_0 = S_0(1 + r_f)^3 = \$150 \times 1.03^3 = \163.91

c. $F_0 = 150 \times 1.06^3 = \178.65

11. The put-call parity relation states that: But spot-futures parity tells us that:

$$C = P + S_0 - \frac{X}{(1 + r_f)^T} \qquad F = S_0 \times (1 + r_f)^T$$

Substituting, we find that:

$$P = C - S_0 + \frac{[S_0 \times (1 + r_f)^T]}{(1 + r_f)^T} = C - S_0 + S_0 = C$$

16. The parity value of F is: $1,300 \times (1 + 0.04 - 0.01) = 1,339$
 The actual futures price is 1,330, too low by 9.

Arbitrage Portfolio	CF now	CF in 1 year
Short Index	1,300	$-S_T - (0.01 \times 1,300)$
Buy Futures	0	$S_T - 1,330$
Lend	-1,300	$1,300 \times 1.04$
Total	0	9

18. a. The current yield for Treasury bonds (coupon divided by price) plays the role of the dividend yield.
- b. When the yield curve is upward sloping, the current yield exceeds the short rate. Hence, T-bond futures prices on more distant contracts are lower than those on near-term contracts.

