Midterm Exam
Fall 2003
Answer Key

1.

(i) Disagree. The initial margin is set above the maintenance margin to create a safely "buffer" of capital that can be lost in cases prices move against the margin account.

(ii) Disagree. It should be long because the payoff is higher the cooler the temperature and the higher the heating costs.

(iii) Agree. Without Hedge: Payoff = St
With Hedge: Payoff = St-(Ft-Fo) = Fo+(St-Ft) = Fo+bt

(iv) Agree. The long position in 200*5,000 = 1 million bushels fixes the future price of the wheat, thereby eliminate risk.

(v) Disagree. The right regression is ? S = a + ß? F + e
Where ß is the estimate of the hedge ratio.

2.

(i) No, not necessarily if it wasn't possible to short-sell oil.

(ii) Yes

	0	T
buy 1 barrel of oil, borrowing money	**0**	**St – 32.14**
Short oil futures	**0**	**33 - Sivt**
Net	**0**	**0.80 Profit**

(iii) Convenience yield is a measure of the benefit from owning the commodity. There is a convenience yield only in (i) and it is: $y = r + u + \frac{Ln(So/Fo)}{T}$

$$= .01 + .01 + \frac{Ln(31.5/27.5)}{1} = 16\%$$

(iv) Fo = So*e^(r + u) T
Graph: Vertical line is Fo, Horizontal line is T
The line should be upward-sloping (concave)

(v) Yes, since for stocks Fo = So*e^(r + u - Q) T, if Q > r + u, the term structure will slope downward.

3.

(i) Yes: swap gain = 1 – 0.4 =0.6 , 0.3 to A, 0.3 to B.

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                X
              ? ? ?
Libor + 1 ? ?   A          B ? ?   4.0%
              ? ? ?
               Libor
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A: Libor + 1 – Libor + X = 3.6 – 0.3 = 3.3

Solve for X to get X = 2.3%.

B: 4 + libor – 2.3 = libor + 1.7 <libor + 2

(ii) Its sensitivity to interest rate changes ? ? measured by the duration.

(iii) Short-sell bond futures to lock n selling price.

(iv) If interest rate rises ? ? bond price drops so the speculator should be short in bond futures or hold short duration bonds.

4.

(i) Loss: cost of beans increase, profit decrease.
Gain: cost of beans decrease, profit increase.

(ii) Long in: 1million pounds/37,500 pounds = 26.67 = 27 contracts.

(iii) Yes. For example in (ii) if 100 futures contracts are used, the risk will actually go up as if a short position is wrongly used instead of a long futures position, risk will rise with the hedge.

(iv) Gain: 27 * 37,500 * (0.75 – 0.64) = $111,375 profit.