

Solutions to Homework Number 2.

3.4 a. The initial value of the forward contract is zero. The forward price is

$$F = 40e^{-1*1} = 44.21.$$

b. The value of the forward contract in six months when the price is \$45 is

$$45 - 44.21 e^{-.1*.5} = 2.95.$$

3.6. Using equation 3.7 in the book with a dividend of 3.2% yields

$$F = 150e^{-.5*(.07 - .032)} = 152.88$$

3.8 The no-arbitrage futures price equals $400e^{.333*(.1 - .04)} = 408.08$, which is greater than the actual futures price. Thus, the correct arbitrage strategy is to buy the futures contract at 408.08, and sell the shares underlying the asset.

3.9 December futures is .9267, March is .9393, June is .9519. The equation that shows the relationship between the futures and spot price of currencies is equation 3.13. The June price is about 2.7% above the December price so the annualized rate of change is about 5.4%. You could also solve the equation 3.13 as $\ln(.9519/.9267)/T = r - r_f = 5.366\%$. Or the U.S. interest rate exceeded the Japan interest rate by about 5.4%.

3.11 The present value of storage costs equals $.06 + .06e^{-.1*.25} + .06e^{-.1*.5} = 0.176$. The futures price is given by equation 3.15: $F = (9 + .176)e^{1*.75} = 9.89$.