

Homework 5

Let $S(t) \equiv$ the price of some security at time t .

- 1 Suppose $S(0) = 80$ and the effective yearly interest rate is $r = .03$. You write a contract to purchase the security in 8 months. What price should you agree to purchase the security at?
- 2 Suppose at 3 months the price of the security has fallen to \$ 70. What is the value/liability of the long position of the forward?
- 3 Suppose you wish to purchase the security in 15 months, (as above, given $S(0) = 80$ and $r = .03$) for \$ 60 what should you pay for the contract today?
- 4 Suppose, in addition, the security pays 1 dividend of \$ 5 at time $t = 1$ month. What should the exchange price be for a forward contract with maturity at 9 months?
- 5 Suppose the security pays continuous dividends at a rate of 6% (and no discrete dividends) in this case, what should the forward price be at 2 years?

Suppose \$ 1 USD buys ¥ 7 CNY today. Suppose the effective interest rate of a 1 year bond in USD is 2%, and the effective interest rate of a 1 year bond in CNY is 4%.

- 6 Suppose you wish to obtain ¥1200 in 18 months. Today you enter into a contract to purchase them in 18 months. How many dollars do you agree to pay for them at that time?
- 7 Suppose the exchange rate has changed at the end of 18 months so that now \$ 1 USD buys ¥6 CNY what is the value/liability of the contract?