

Problem 5.3.

Suppose that you enter into a six-month forward contract on a non-dividend-paying stock when the stock price is \$30 and the risk-free interest rate (with continuous compounding) is 12% per annum. What is the forward price?

Problem 5.4.

A stock index currently stands at 350. The risk-free interest rate is 8% per annum (with continuous compounding) and the dividend yield on the index is 4% per annum. What should the futures price for a four-month contract be?

Problem 5.9.

A one-year long forward contract on a non-dividend-paying stock is entered into when the stock price is \$40 and the risk-free rate of interest is 10% per annum with continuous compounding.

- What are the forward price and the initial value of the forward contract?
- Six months later, the price of the stock is \$45 and the risk-free interest rate is still 10%. What are the forward price and the value of the forward contract?

Problem 5.10.

The risk-free rate of interest is 7% per annum with continuous compounding, and the dividend yield on a stock index is 3.2% per annum. The current value of the index is 150. What is the six-month futures price?

Problem 5.12.

Suppose that the risk-free interest rate is 10% per annum with continuous compounding and that the dividend yield on a stock index is 4% per annum. The index is standing at 400, and the futures price for a contract deliverable in four months is 405. What arbitrage opportunities does this create?

Problem 5.14.

The two-month interest rates in Switzerland and the United States are, respectively, 1% and 2% per annum with continuous compounding. The spot price of the Swiss franc is \$1.0500. The futures price for a contract deliverable in two months is also \$1.0500. What arbitrage opportunities does this create?

Problem 5.25.

What is the cost of carry for (a) a non-dividend-paying stock, (b) a stock index, (c) a commodity with storage costs, and (d) a foreign currency?

Problem 5.28.

The current USD/euro exchange rate is 1.4000 dollar per euro. The six month forward exchange rate is 1.3950. The six month USD interest rate is 1% per annum continuously compounded. Estimate the six month euro interest rate.

Problem 5.29.

The spot price of oil is \$80 per barrel and the cost of storing a barrel of oil for one year is \$3, payable at the end of the year. The risk-free interest rate is 5% per annum, continuously compounded. What is an upper bound for the one-year futures price of oil?