27. What is the forward price of a 6-month forward contract on a non-dividend-paying stock when the stock price is \$30 and the risk-free interest rate is 12% per annum?
28. Suppose $S_0 = 17$, $F(0,1) = 18$, $r = 0.08$ cc, and short-selling requires a 30% security deposit attracting interest at $d = 4\%$. Explain how an arbitrage opportunity can be realized. Find the highest rate $d$ for which there is no arbitrage opportunity.
29. A trader owns gold as part of a long-term investment portfolio. The trader can buy gold for \$450 per ounce and sell it for \$449 per ounce. The trader can borrow funds at 6% per year and invest funds at 5.5% per year (both annual compounding). For what range of 1-year forward prices of gold does the trader have no arbitrage opportunities? Assume there is no bid-offer spread for forward prices.
30. Consider a stock whose price on Jan 1 is \$120 and which will pay a dividend of \$1 on Jul 1 and \$2 on Oct 1. The interest rate is 12%. Is there an arbitrage opportunity if on Jan 1 the forward price for delivery of the stock on Nov 1 is \$131? If so, explain how and compute the arbitrage profit.
31. What is the six-month forward price for a stock currently priced at \$150 and paying a continuous dividend at rate 3.2% when the risk-free interest rate is 7% with continuous compounding?
32. A 1-year long forward contract on a non-dividend-paying stock is entered into when the stock price is \$40 and $r = 0.1$. What are the forward price and the initial value of the forward contract? And, what are the forward price and the value of the forward contract six months later, when the stock price is \$45 and $r$ is still 10%?
33. Suppose that the price of a stock is \$45 at the beginning of the year, the risk-free rate is 6%, and a \$2 dividend is to be paid after half a year. For a long forward position with delivery in one year, find its value after 9 months if the stock price at that time turns out to be (a) \$49 (b) \$51.