Corporate Finance, Options, Dividends, practice Exam Problems

(The attached PDF file has better formatting.)

*Question 1.1: Dividends

On April 13, a stock trades at $45, with a stock price volatility of 35%. The risk-free rate is 6.5% with annual compounding, and the expected return on the stock is 11.5% per annum. Thee month European calls and puts are trading with a strike price of $40.

If the stock pays a dividend of $5 on April 23, what happens to the prices of the stock and the options? The dividend is *not* expected: investors did not expect the dividend when they bought the put and call options. The dividend conveys no new information about the prospects of the firm.

A. Stock price increases, call option price increases, put option price decreases.
B. Stock price decreases, call option price decreases, put option price increases.
C. Stock price increases, call option price decreases, put option price increases.
D. Stock price decreases, call option price increases, put option price decreases.
E. Stock price decreases, call option and put option prices stay the same.

Answer 1.1: B

If the dividend conveys no new information about the prospects for the firm, the stock price decreases by the amount of the dividend. Taxes differ for dividends vs capital gains. They are lower for capital gains, so the decline in the share price is slightly less than the dividend. Financial economists have not been able to accurately model the effect of taxes.

We demonstrate the decline in the stock price by an arbitrage argument. Suppose a dividend of $1 is paid on day Z, the stock price on day Z-1 is $100, and the expected stock price on day Z+1 is also $100. On day Z-1, an arbitrageur buys the stock for $100 and enters into a forward contract to sell the stock for $100 on day Z+1. The arbitrageur collects the $1 dividend on day Z and recovers the purchase price on day Z+1.

If the expected stock price on day Z+1 is more than $99, or the current price minus the dividend on day Z, the arbitrageur makes a risk-free profit with these transactions.

If the expected stock price on day Z+1 is less than $99, or the current price minus the dividend on day Z, the arbitrageur makes a risk-free profit by selling the stock short on day Z-1 and entering into a forward contract to buy the stock on day Z+1.

When the stock price rises, the value of a call option rises and the value of a put option declines.