University of Texas at Austin

Quiz #12

Delta hedger's profit.

Problem 12.1. (15 points) An investor buys a time$-T$ European call option on this stock at time-0 and creates a delta-neutral, fully-leveraged portfolio by trading in the shares of the underlying stock and borrowing/lending at the continuously compounded risk-free interest rate r.

The current price of the underlying stock is \$50 and its dividend yield is equal to the continuously compounded risk-free interest rate . The continuous dividends are assumed to be continuously and immediately reinvested in the same stock.

The time-0 premium of the above call option is \$7.50 and its delta is 0.56. The premium for the otherwise identical put option is \$5.60.

At time$-t$ (prior to the call's exercise date T), the investor decides to liquidate her portfolio. She sees that the current stock price is the same as it was at time-0, the above call premium is \$4.50 and the above put premium is \$2.40.

What is the investor's profit after liquidation?