

# EXAM MFE QUESTIONS OF THE WEEK

S. Broverman, 2007

## Week of May 7/07

(CAS May 07)

For a dividend paying stock and European options on this stock, you are given the following information:

- The current stock price is \$49.70.
- The strike price of options is \$50.00.
- The time to expiration is 6 months.
- The continuous risk-free rate is 3% annually.
- The continuous dividend yield rate is 2% annually.
- The call price is \$2.00.
- The put price is \$2.35.

Using put-call parity, calculate the present value arbitrage profit per share that could be generated, given these conditions.

- A) Less than \$0.20      B) At least \$0.20, but less than \$0.40  
C) At least \$0.40, but less than \$0.60  
D) At least \$0.60, but less than \$0.80      E) At least \$0.80

**The solution can be found below.**

## **Week of May 7/07 - Solution**

According to put-call parity, the price of the put should be

Call price + PV of Strike price – Prepaid forward stock price

$$= 2.00 + 50e^{-.5(.03)} - 49.70e^{-.5(.02)} = 2.05 .$$

Since the put is priced at 2.35, we should be able to sell the put at \$2.35

and buy a synthetic put for \$2.05. The arbitrage profit will be \$.30.

The synthetic put can be bought by shorting  $e^{-.5(.02)}$  shares of stock and receiving

\$49.21, and investing  $50e^{-.5(.03)} = 49.26$  (lending) at the risk free rate for 6 months

and buying the call for 2.00, for a net cost of  $49.26 + 2.00 - 49.21 = 2.05$  .

Answer: B