

UNIVERSITY OF TEXAS AT AUSTIN

Quiz #10

Chooser options. Gap options. Foreign currencies.

Provide your **final answer only** to the following problem(s):

Problem 10.1. (2 points) The chooser option with the exercise date T and with the strike K is worth at least as much as a vanilla call with the same underlying, strike and exercise date. *True or false?*

Solution: TRUE

Problem 10.2. (2 points) The payoff of a gap call option is always nonnegative regardless of the choice of the trigger and the strike. *True or false?*

Solution: FALSE

Problem 10.3. (2 points) Gap call options are always worth more than otherwise identical call options with the same strike price. *True or false?*

Solution: FALSE

Problem 10.4. (5 points) Consider a continuous-dividend-paying stock with the current price of \$45 and dividend yield 0.02. The continuously compounded, risk-free interest rate is 0.04. Consider a pair of six-month, \$50-strike, \$45-trigger gap options. The gap call sells for \$1.70. What is the price of the gap put?

- (a) \$5.17
- (b) \$6.16
- (c) \$7.27
- (d) \$7.41
- (e) None of the above.

Solution: (b)

By put-call parity for gap options, we have

$$V_{GP}(0) = 1.70 + 50e^{-0.02} - 45e^{-0.01} = 6.16.$$

Problem 10.5. (5 points)

An American investor wants to hold 100 euros six months from today. You are given the following:

- the spot exchange rate is \$1.12 per euro;
- the continuously compounded risk-free interest rate on the euro is 3.0%;
- the continuously compounded risk-free interest rate on the USD is 1.25%.

What is the price the investor would have to pay today?

- (a) \$108.69
- (b) \$110.33
- (c) \$111.61
- (d) \$112
- (e) None of the above.

Solution: (b)

$$100F_{0,T}^P(x) = 100e^{-0.03 \cdot (0.5)} \cdot 1.12 = 110.333.$$