Assignment 7

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1. Consider a risk-free rate of 1% and an economy where the feasible future state of the price are $S_T = \{90, 100, 110, 120\}$, each one with equal probability. Given this, what is the fair value of a Call option with strike 100?

2. Consider a risk-free rate of 1% and an economy where the feasible future state of the price are $S_T = \{90, 100, 110, 120\}$, each escenario with the following probabilities $\mathrm{P}^{\mathbb{Q}} = \{1/3, 1/3, 1/6, 1/6\}$. Given this, what is the fair value of a Call option with strike 100?

3. .

   a. A butterfly spread is the purchase of one call at exercise price X_1, the sale of two calls at exercise price X_2, and the purchase of one call at exercise price X_3. X_1 is less than X_2, and X_2 is less than X_3 by equal amounts, and all calls have the same expiration date. Graph the payoff diagram to this strategy.

   b. A vertical combination is the purchase of a call with exercise price X_2 and a put with exercise price X_1, with X_2 greater than X_1. Graph the payoff to this strategy.

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4. .

   A bearish spread is the purchase of a call with exercise price X_2 and the sale of a call with exercise price X_1, with X_2 greater than X_1. Graph the payoff to this strategy

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