3. Option strategies

Liuren Wu

We consider one “underlying” risky security (it can be a stock or exchange rate), and we use $S$ to denote its price, with $S_0 = 100$ being its current price and $S_T$ being its future price at time $T$. Ignore bid-ask spread and transaction cost and assume that you can buy or sell any amount of the security at the price $S_0 = 100$.

1. For chapter 3, you need to be able to construct a portfolio with calls, puts, forwards, bonds to replicate any payoff I plot at time $T$. An example is the following figure —It does not mean much, but just complicated enough to allow you do anything. There are multiple solutions to this question (that is, you can use either call or put or a combination). Any solution will do.

2. Understand the basic uses of straddles, strangles, butterfly spreads, risk reversals, calendar spreads, bull and bear spreads. As a homework, you can do a quick summary on what you can use them to bet on.