Theoretical Grounds and Market Adaptations of Financial Fx and Interest Rate Options

Gerardo Durán Martín

Universidad Marista

August 22, 2017

Table of Contents

- Bonds

A Bond is a debt obligation, its main function is to raise capital for the issuer of the bond. In turn, the buyer of the bond receives interest on the amount loaned.

- Bonds
- Stocks

A stock is a security that represents ownership on a fraction of a corporation. The return on the company for the owner of a stock is represented as a dividend.

Financial Markets

The Instruments

- Bonds
- Stocks
- Foreign Exchange Currencies

"One countrys currency freely convertible in the foreign exchange market." (Kozikowski, 2013)

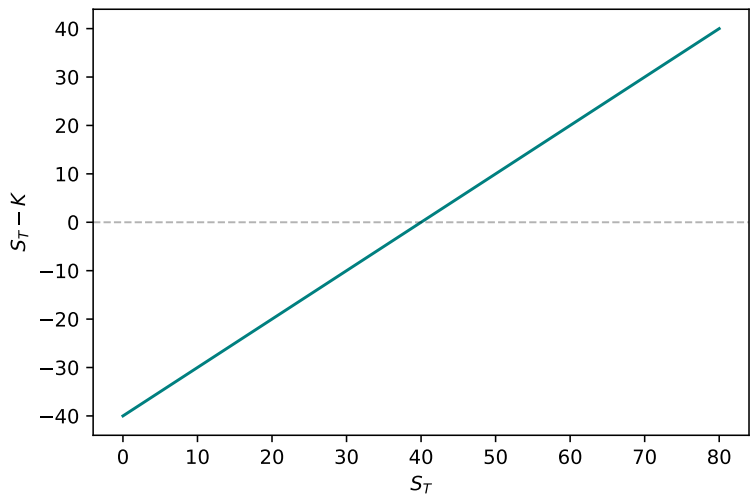
- Bonds
- Stocks
- Foreign Exchange Currencies
- Derivatives

"[A derivative is] a financial instrument whose value depends on (or derives from) the values of other, more basic, underlying variables." (Hull, 2014)

Definition (Forward)

A forward is a derivative contract that gives the buyer both the right, and the obligation to to purchase a specified amount of the stock at some future time T at a price K. The value of the forward today is 0.

The payoff of the forward is $S_T - K$. What is the K such that the contract has zero value today and has no possibility of arbitrage?



Assume a continuously compounded interest rate r, denote S_t the value of the stock at time t. At $t = T$ the value of the forward is

$$S_T - K = 0$$

Then, by no arbitrage, the present value of the strategy is

$$S_0 - Ke^{-rT} = 0 \implies K = S_0 e^{rT}$$

Therefore, $S_0 e^{rT}$ is the the value that guarantees no arbitrage.

Probability Theory

We work on the measurable space

Measurable Spaces

$$(\Omega, \mathscr{F}, \mathbb{P})$$