Homework 1: Survival Probabilities and Hazard Rates

Credit Risk (MF772) Fall 2021 Instructor: Roza Galeeva

Due date: Sep 16 , 2021 8am. Please, note that `late assignments will not be accepted.`

---

1. Finish the problem we started in the class, using the set up as in the spreadsheet "TwoBonds0.xlsx" at Questrom tools (slightly modified).

Now we are given only yields on risk free bonds and constant hazard rates $h(T) = 0.04$ (different).

- Calculate yields for the defaultable bonds ("Issuer") by calculating survival probabilities based on given hazard rates, using formulas for the *discrete case*
- Calculate yields for the defaultable bonds ("Issuer") by calculating survival probabilities based on given hazard rates, using formulas for the *continuous case*

2. Consider the following Weibull distribution with parameters:

- $\lambda = 0.04$, $p = 1$ (exponential)
- $\lambda = 0.04$, $p = 1/2$
- $\lambda = 0.04$, $p = 2$.

Perform the following:

a) Simulate random default times (at least $10,000$) from the these three distributions

b) Make histograms, & observations how they compare to each other.

c) Calculate their means, standard deviations.

d) Compare those with the theoretical values, and check the relations between them.