FIXED INCOME SECURITIES

FRE : 6411

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Change of Probability Measure

- Assume with have two dices(A,B)
- Assume Dice A is fair dice : $P(i) = {}^{1}/_{6}\ for\ i = 1, \dots, 6$
- Assume Dice B is loaded dice : $P(i) = {}^{1}/_{6}\ for\ i = 2,3,4,5,$
- $P(1) = {}^{1}/_{12}$ and $P(6) = {}^{3}/_{12}$
- Assume X is a random variable which is the face value of dices after throw.
- Throw Dice A and find $E^{A}[X]$
- Throw Dice B and find $E^{B}[X]$
- Find the random variable Z such that $E^{B}[X] = E^{A}[ZX]$

Quiz 1

- Assume we have 2 period Economy(0,1). In period 1 there are two possible state : (u, d)
- Assume we have one risk free(asset 1) and one risky asset(asset 2), the prices of these two assets are 100 in period 0.
  - $P_0 = (p_{01} = 100, p_{02} = 100)$
  - $P_{1,1} = (p_{1u} = 105, p_{1d} = 105)$
  - $P_{2,1} = (p_{2u} = 110, p_{2d} = 100)$
- In period 0, find a portfolio of these two assets $X_u^{AD} = (x_{ou}, x_{1u})$ such that the value of this portfolio in period 1 state u is 1, and in period 1 state d is 0.
  - $W_{1u}^{AD} = [w_{1u,u}^{AD} = 1, w_{1u,d}^{AD} = 0]$

Quiz 1

- What is the value of this portfolio in period 0.