Assignment 1. CHANJUNG KIM.

1. The probability that both hedge funds lose money

$\Rightarrow (1-0.6) \times (1-0.7) = 0.12$

12%

2. The probability that the manager is up next year

$\Rightarrow 0.5 \times 0.8 + 0.2 \times 0.1 + 0.3 \times 0.5 = 0.57$

57%

3. P(Definitely skillful | Tested positive)

$$= \frac{P(\text{Tested positive} \mid \text{Definitely skillful}) \times P(\text{Definitely skillful})}{P(\text{Tested positive})}$$

$$= \frac{0.9 \times 0.01}{0.01 \times 0.9 + 0.99 \times 0.1} = \frac{1}{12}$$

4. The value of the bond after one year

$= 100 \times 0.1 \times 0.4 + 100 \times 0.9 = 94$

(recovered after default + no default)

$\therefore$ The present value of the bond $= 94 \times \frac{1}{e^{0.05}} \simeq 89.42$

$89.42

5. The variance of $1_A = E(1_A^2) - E(1_A)^2$

$= p - p^2$

$= p(1-p)$