

OMGT3223 – Quiz #2

Please show all formulae, notation, calculations, definitions, assumptions, etc. Please include a brief explanation of your answer to receive full credit. Feel free to use additional sheets of paper to complete your work and attach them to this quiz when you turn it in.

1. Table 1.1 depicts three investment alternatives, two different states, and probabilities associated with those states. Please show your work.

Table 1.1

Decisions	States	
	Boom	Bust
Growth Stock	100	-50
AAA Bonds	7	12
Saving Account	16	6
Probability	0.4	0.6

- a. Which decision would you make using the Maximax criterion?
- b. Which decision would you make using the Maximin criterion?
- c. Which decision would you make using the Minimax Regret criterion?
- d. Find the expected value of each decision and comment on which you would choose (Hint: Think about the three areas of sensitivity analysis)?

a) Maximax

GS	100	CHOOSE GS
AAA	12	
SA	16	

b) Maximin

GS	-50	
AAA	7	CHOOSE AAA
SA	6	

c) Minimax Regret

	Good Regret	Bad Regret	Max Regret	
GS	$100 - 100 = 0$	$12 - (-50) = 62$	62	CHOOSE GS
AAA	$100 - 7 = 93$	$12 - 12 = 0$	93	
SA	$100 - 16 = 84$	$12 - 6 = 6$	84	

d) $E(x) = \sum x p(x)$

GS $\Rightarrow$

AAA $\Rightarrow$

SA $\Rightarrow$

$$E(GS) = 100(0.4) + (-50)(0.6) = 10$$

$$E(AAA) = 7(0.4) + 12(0.6) = 10$$

$$E(SA) = 16(0.4) + 6(0.6) = 10$$

No Strict Dominance:

All $E(x) = 10$ so
 pick Any OR
 pick GS as a Risk TAKER
 or pick AAA if more Risk
 Averse

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2. Alan Fang has a decision to make. He can invest in one of three different real estate projects: State and Main, Hillcrest II, or Fort Street IV. He knows three things can happen after he invests: the market could boom, the market could hold steady, or the market could tank. He also knows his \$ returns from State and Main could be \$1000k in a boom, \$375k in a steady market, and -\$500k if the market tanks. On the other hand Hillcrest II offers \$800k in a boom, \$300k during steady conditions, and \$250k if the market tanks. Finally, Fort Street IV offers \$2000k in a boom, \$125k if things are steady, and -\$4000k if things tank.
- Create a payoff table for the real estate decision problem.
 - Which real estate choice would you make using the Equal Likelihood criterion?
 - If the probability of future events follows the distribution in Table 3.1, find the expected value of each of the real estate choices. Which real estate project do you prefer and why (Hint: remember to discuss with regards to sensitivity analysis)?

Table 3.1

Future State of Market	p(Future State of Market)
Boom	0.72
Steady	0.08
Tank	0.20

a)

	Boom	Steady	TANK
S+M	1000K	375K	-500K
Hill	800K	300K	250K
FS	2000K	125K	-4000K

c) $E(x) = \sum x p(x)$

$$E(S+M) = 1000(0.72) + 375(0.08) + (-500)(0.20) \\ \approx 650$$

$$E(\text{Hill}) = 800(0.72) + 300(0.08) + 250(0.20) \\ \approx 650$$

$$E(\text{FS}) = 2000(0.72) + 125(0.08) + (-4000)(0.2) \\ \approx 650$$

b) For Equal Likelihood All weights are equal + ARE $1/3$

$$EL(S+M) = 1000(1/3) + 375(1/3) + (-500)(1/3) \\ \approx 292$$

$$EL(\text{Hill}) = 800(1/3) + 300(1/3) + 250(1/3) \\ \approx 450 *$$

$$EL(\text{FS}) = 2000(1/3) + 125(1/3) + (-4000)(1/3) \\ \approx -625$$

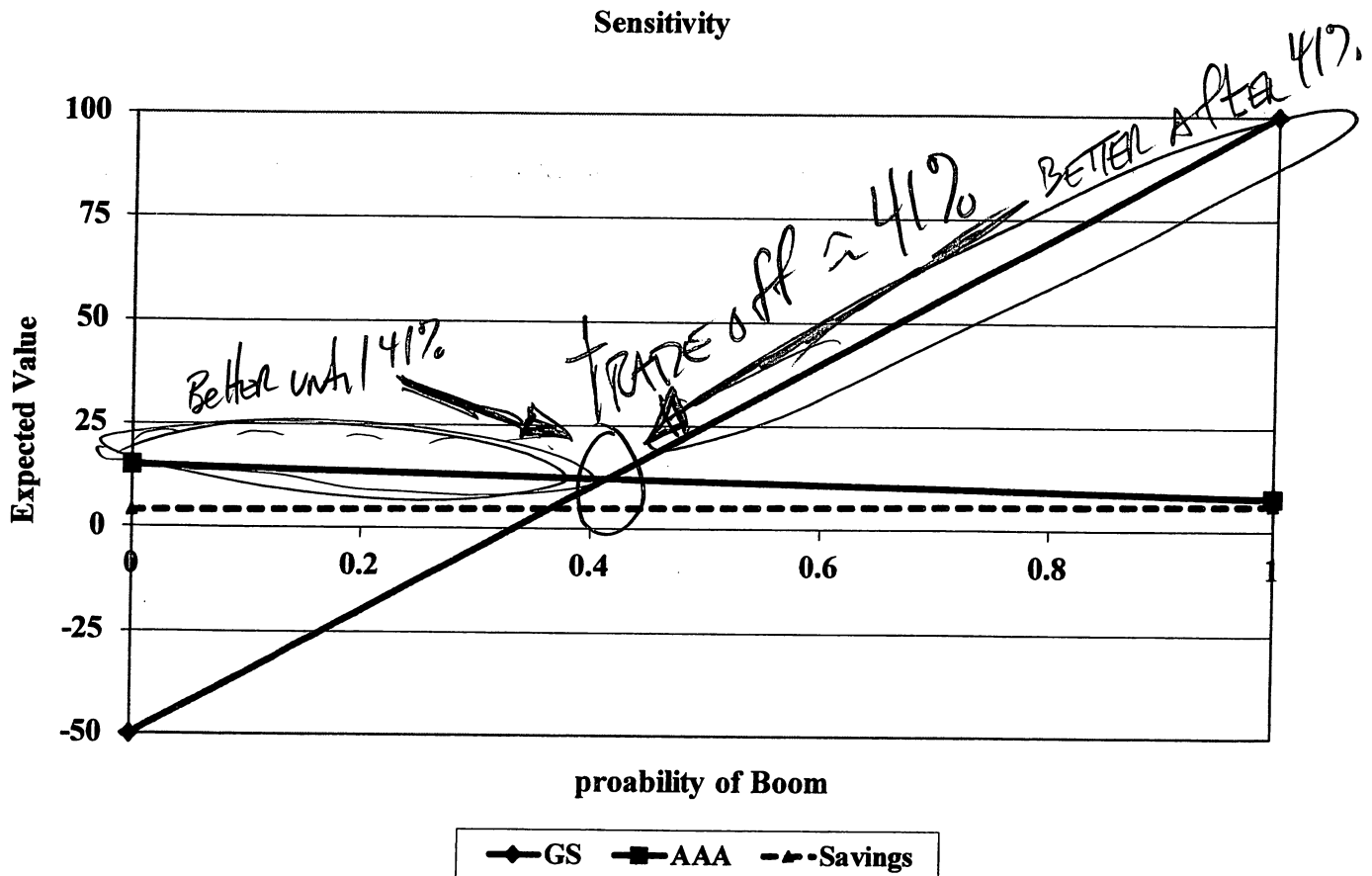
IN TURN PICK Hillcrest AS IT HAS Highest Expectation

ALL $E(x) \approx 650$ SO PICK ANY OR PICK FS AS IT GETS YOU 2000K BUT RISKY OR PICK Hill AS IT IS STABLE

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3. Given the following diagram comment with regard to 1) dominance, 2) trade-offs, and 3) risks. Also, explain which decision you would prefer and why. NOTE: This problem is not related to problem 1 in any way. Answer this problem as a stand-alone problem.



SPEAK TO THESE 3 AREAS:

1) No strict Dominance

2) Hoff @ 41% for AAA + GS

3) RISK: Regret
Slope of line(s)
Hi vs. Low

GS is Riskiest
AAA constant/stable
SA is kinda out

3
OR BASED ON RISK PREFERENCE PICK GS OR AAA

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Formulae Sheet

Mean

$$\mu = \frac{\sum_{i=1}^n x_i}{n}$$

Standard Deviation

$$SD = \sqrt{\frac{\sum_{i=1}^n (x_i - \mu)^2}{n - 1}}$$

± 3 SD $\sim$ 99.7% of values, ± 2 SD $\sim$ 95% of values

Expected Value

$$E(x) = \sum_{i=1}^n x_i p(x_i)$$

Bayes' Formula

$$p(A | B) = \frac{p(A \text{ and } B)}{p(B)}$$