

EXTRA PROBLEM 8

VALUE OF PERFECT INFORMATION

Mister Smith is trying to decide between investing \$10,000 windfall into a savings account at a 10% yearly interest rate or a new stock. The return on the new stock is linked in part to the overall stock market behavior as exhibited by the DOW JONES INDEX. If the DOW JONES INDEX increases on the average during the year then there is a probability of 0.8 that the stock value will increase. If the DOW JONES INDEX decreases on the average during the year, then there is a probability 0.3 that the stock will increase. The probability that the DOW JONES INDEX increases on the average during the coming year is 0.55. The net payoff in one year on the investment of \$10,000 for these events is as follows

	STOCK VALUE	
	Increase	Decrease
DOW JONES INDEX Increases	\$8,000	-\$5,000
DOW JONES INDEX Decreases	\$2,000	-\$10,000

That is, if the DOW JONES INDEX increases on the average during the year and the stock value increases, then after one year mister Smith will have $\$10,000 + \$8,000 = \$18,000$ dollars. Use the following notation when answering the question below.

IU = INDIVIDUAL STOCK GOES UP,
ID = INDIVIDUAL STOCK GOES DOWN
DU = DOW JONES INDEX GOES UP
DD = DOW JONES INDEX GOES DOWN

A. Draw the decision tree for the problem at hand and solve the problem using EMV. Assume a one year time frame for the decision analysis. What is the optimal decision?

B. Fill in the blanks of the following probability table. Round numbers off to three decimal places.

X	(0.550) Pr(X DU)	() Pr(X DD)	Pr(X ∩ DU)	Pr(X ∩ DD)	Pr(X)	Pr(DU X)	Pr(DD X)	CHECK
IU	0.800	0.300						
ID								
CHECK								

C. Draw the decision tree for assessing the worth of PERFECT information regarding the DOW JONES INDEX. What is the EVPI regarding the DOW JONES INDEX.

D. Draw the decision tree for assessing the worth of PERFECT information regarding the INDIVIDUAL STOCK BEHAVIOR. What is the EVPI regarding the INDIVIDUAL STOCK BEHAVIOR.

E. What information would you rather get. Base your answer on the outcome of part C and part D and provide an explanation.