

I

Payoff (\$M, NPV) numbers in parentheses are losses

	Economic Environment			EMV
	poor	good	great	
Probability	0.5	0.4	0.1	
do nothing	40	20	25	30.5
expand	22	35	35	28.5
double capacity	(20)	40	50	11
calc EMVc	40	40	50	41

EVPI = EMVc - EMVr = 41 - 30.5 = 10.5

EMV strategy gives 30.5, CYA strategy gives 28.5. CYA costs the company \$2.0 M

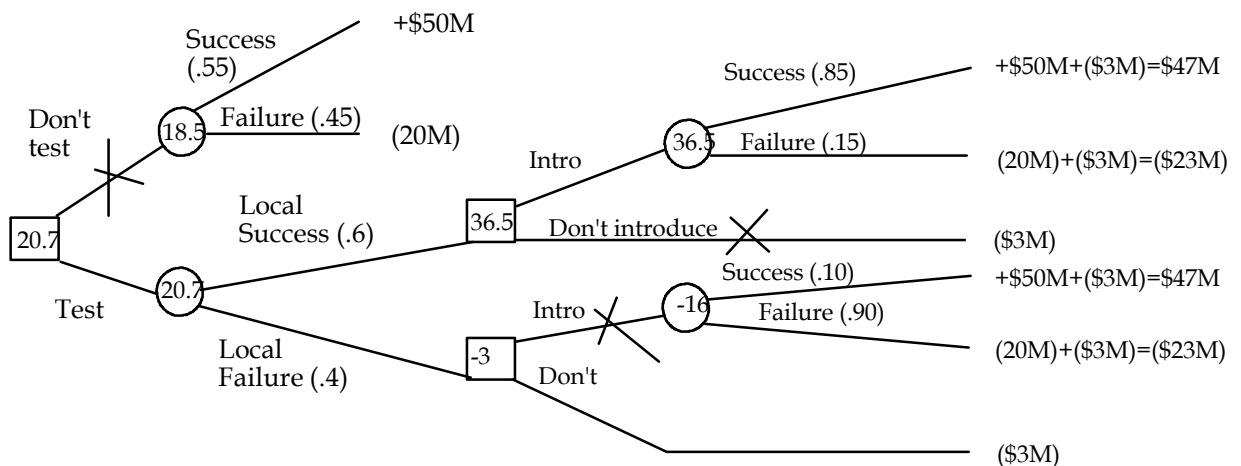
regrets(\$M, NPV)

	Economic Environment			worst regret for each strategy
	poor	good	great	
do nothing	0	20	25	25
expand	18	5	15	18
double capacity	60	0	0	60

II

- age = mean + Z(0.2) * Stdev = 10 - 0.84 * 4 = 6.64 years
- Breakeven price of service contract = Expected cost of failure = Pfailure * Cost of failure;
 $Z = (6-10) / 4 = -1.0$, so P failure = 0.1587, and expected cost of Failure = 0.1587 * \$200 = \$31.74
- 10 + 30 Ph = 50 - 20 Ph; Ph = 0.8, or 80%
- Control limnits = 32 +/- 3 oz. 3oz. = 3 * 5 / sqrt(n); sqrt(n) = 5; n = 25
- Reliability with backup = 0.8 * 0.9 * 0.8 = 0.576; Reliability without backup = 0.6 * 0.9 * 0.8 = 0.432
 difference in expected cost of failure = 0.144 * \$1000 = \$144 = value of backup piece

III



Better to test. With the information, you make \$20.7M, without it you make \$18.5M. The value of the information, even though imperfect, is \$2.2 M more than the \$3M you paid for it. Thus, the value of the information is \$2.2M plus \$3M = \$5.2M. I changed the weights on the questions so that the EVSI was only worth 10 points.

IV

Future grants in \$K as a function of collaboration strategies

A.Rogant / B.Zarre	B secretive	B share some	B collaborate	B.Zarre's Maximum Grants
A Secretive	50 / 50	250 / 40	1300 / 30	
A Share some	40 / 250	240 / 240	1250 / 50	
A Collaborative	30 / 1300	50 / 1250	1200 / 1200	

A.Rogant's Maximum Grants

c) the prisoner's dilemma approach--myopic greed--results in secretive/secretive and only \$50K for each.

d) It would be a lot better if they could be convinced to collaborate and get \$1200 K each.

e) This could be enforced by prior agreement to share the credit or the University Chancellor's ax.

f) Not a zero sum game as Sum of winnings doesn't equal sum of losings. the total changes depending on the combination of strategies. Both can win, or both can lose.

- V
- A.) $(3000-1000) / (0.50-0.25) = 8000$
 - B.) $1000 + 0.50 * 5000 = X + 0.25 * 5000$; $X = 2250$
 - 2) The Overflowing Bologna Sandwich Technique
 - 3) Ben Franklin Balance Sheet
 - 4) Get information when it is worth more than it costs.

