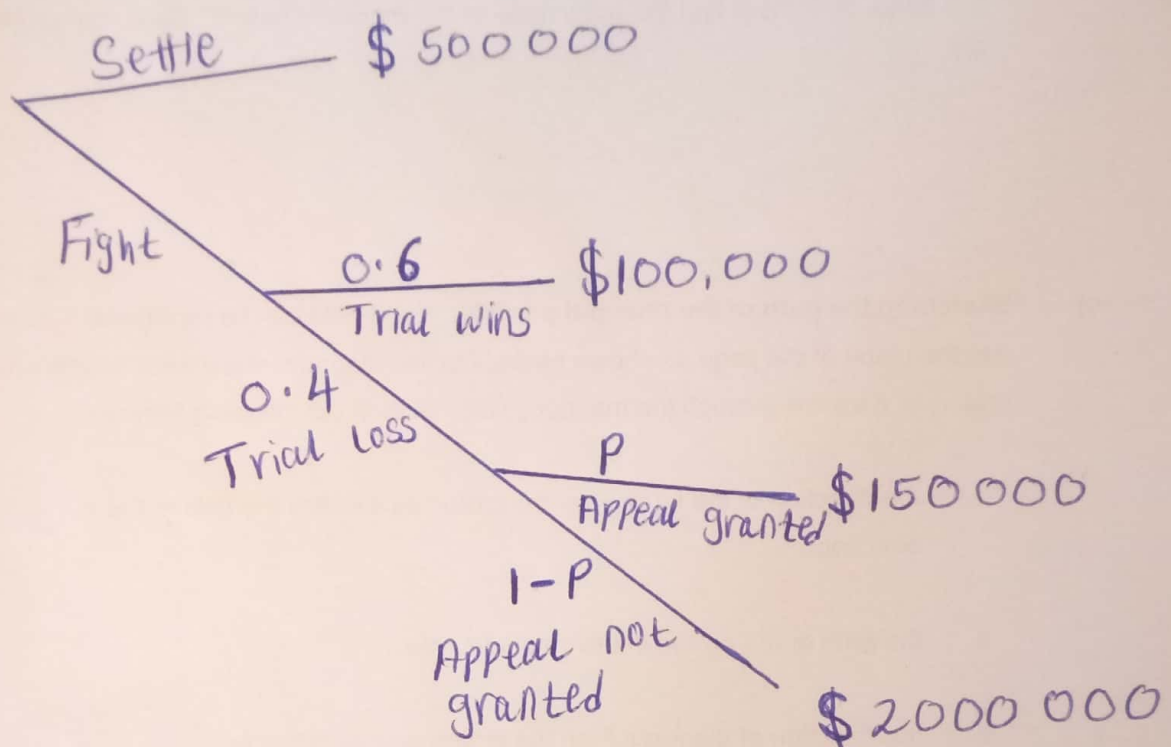


1. (a) Decision Tree

(b) Expected payoff from appealing

$$150,000[P] + 2,000,000[1-P]$$
$$= 2,000,000 - 1,850,000P$$

(C) Expected payoff from fighting the case in court.

$$\left[2000000 - 1850000P \right] 0.4 + \left[100000 \right] 0.6$$

$$= 800000 - 740000P + 60000$$

$$= 860000 - 74000P$$

(d) If $P = 0.3$

$$= 860000 - 74000(0.3)$$

$$= 837800$$

$$\therefore 500000 < 837800$$

It should settle the case as the cost is lower.

$$(e) 860000 - 74000P > 500000$$

$$P < 4.864$$

Therefore, $P < 4.864$. Therefore it should settle the case.

2 (a) A sum of 2 or 4 is possible in following ways $= (1, 1), (1, 3), (3, 1), (2, 2)$

$$\begin{aligned}\text{Total possible outcomes} &= 6 \times 6 \\ &= 36\end{aligned}$$

Probability of win (i.e., sum of 2 or 4)

$$= \text{Probability of receiving } \$324 (P) = \frac{4}{36}$$

$$= \underline{\underline{\frac{1}{9}}}$$

Probability of no win (other than sum of 2 or 4) $=$ Probability of receiving \$81

$$= 1 - P$$

$$= 1 - \frac{1}{9}$$

$$= \underline{\underline{\frac{8}{9}}}$$

(b) Expected payoff from playing the game

Expected payoff $= (P)$ payoff incase of win

$(1 - P)$ payoff incase of no win.

$$= \left(\frac{1}{9}\right) 324 + \left(\frac{8}{9}\right) 81 = 108$$

$$\text{Expected payoff} = \underline{\underline{\$108}}$$

2.(c) Expected utility from playing the game

Utility in case of win = $u(324)$

Note: as $u = \sqrt{I} = \sqrt{324}$
 $= 18$

Utility in case of no win = $u(81)$

$$= \sqrt{81}$$

$$= 9$$

$$\text{Expected utility} = p \times u(324) + (1-p) u(81)$$

$$= \frac{1}{9} (18) + \left(\frac{8}{9}\right) 9$$

$$= 2 + 8$$

$$= 10 \text{ utils}$$

(d) Should you test your luck or refuse to play?

Expected utility in case of playing game = 10 utils

Expected utility in case of not playing = $u(144)$

$$= \sqrt{144}$$

$$= 12 \text{ utils}$$

Utility in case of not playing game is higher than expected utility from playing the game. So, agent would refuse to play.

2 (c) To find minimum payment by friend in event v win to convince you to play.

Let X = amount offered in case of win

Expected utility from playing game = utility from not playing

$$P \times U(X) + (1-P) U(81) = 12$$

$$\left(\frac{1}{8}\right) U(X) + \left(\frac{8}{9}\right) 9 = 12$$

$$U(X) + 72 = 108$$

$$U(X) = 36$$

$$\sqrt{X} = 36$$

$$X = (36)^2$$

$$= 1296$$

$$X = \$1296$$

A minimum of \$1296 should be offered in case of win to make game preferable.

3. (a) Calculation of additional income for intermediate level.

$$= \text{Benefit Amount} \times \text{Weeks}$$

$$10,000 \times 4$$

$$= \underline{\underline{\$40,000}}$$

- (b) Calculation of additional income for Advanced level.

$$= \text{Benefit Amount} \times \text{Weeks}$$

$$= \$15,000 \times 6$$

$$= \underline{\underline{\$90,000}}$$

- (c) No, he will not. This is because from calculation we get $\$10,000 \times 6 = \$60,000$. Now, $\$60,000 < \$108,000$ and therefore he will not complete the advanced level course.

- (d) A low ability candidate will complete the intermediate level course.

- (e) Yes, $y=4$ will allow firms to identify candidates correctly because some of the values are within the given range i.e. \\$90,000.

$\gamma = 6$ will not allow firms to identify candidates correctly. This is because no value of additional income is reaching the high range of \$108,000.

(f)

$$10000\gamma = 85000$$

$$\therefore \gamma = \frac{85000}{10000}$$

$$\gamma = 8.5$$

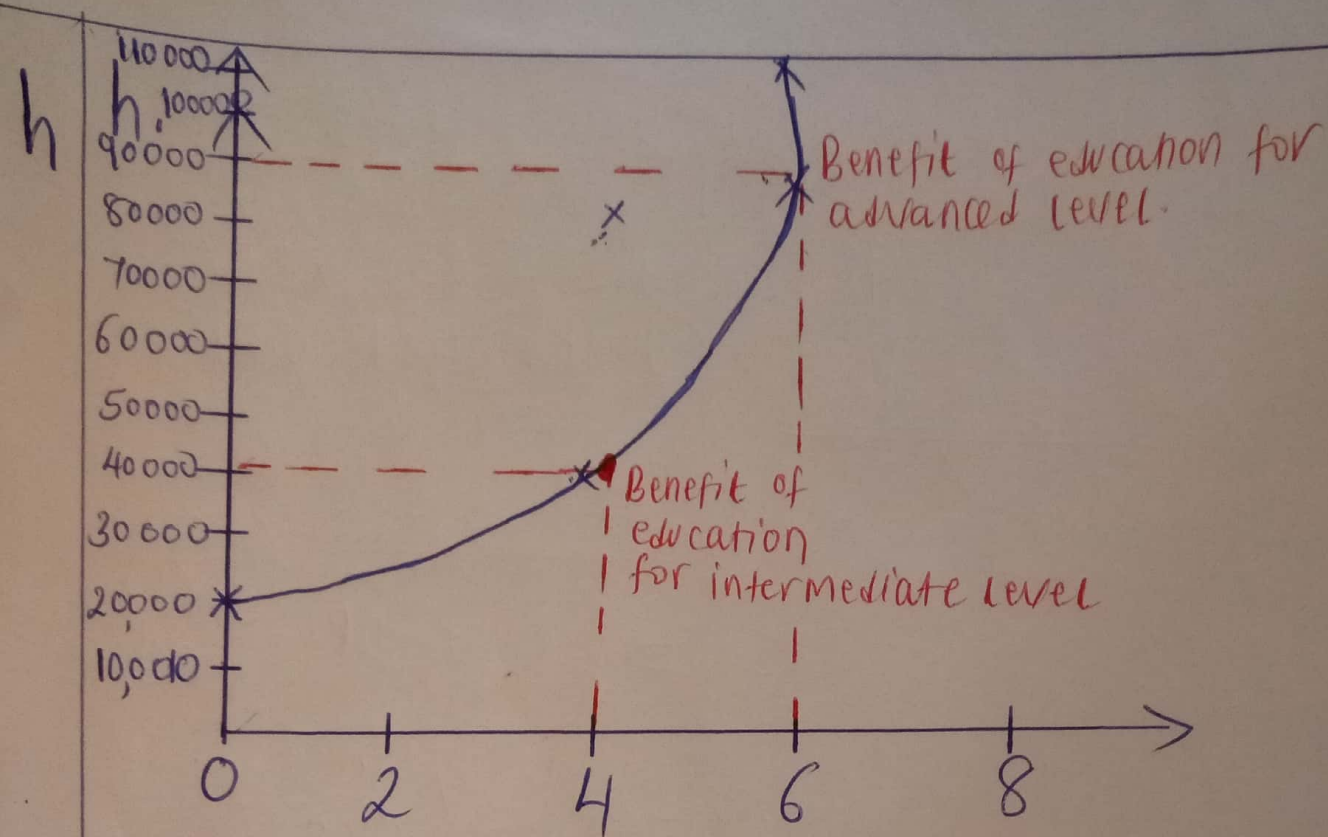
$$\text{Range} = \underline{0 < \gamma \leq 8.5}$$

(g)

$$10,000\gamma = 108000$$

$$\therefore \gamma = \frac{108000}{10000}$$

$$\gamma = 10.8 \Rightarrow \underline{0 < \gamma \leq 10.8}$$



- (i) In labor market model of adverse selection, workers differ in their productivity levels. When workers are motivated, inefficiencies related to adverse selection decrease and the competitive equilibrium is characterized by a higher wage.

4 (a) Low level of effort would Jim choose when $S=0$ because if he is getting 0% of revenue share than when he put high level effort.

(b) Jane's expected utility when $S=0$ is also zero.

(c) $S=0.3$ means 30% is the minimum revenue share that Jane has to offer to Jim to ensure that Jim exerts high efforts.

$$(d) (15600 \times 0.7) + (10,400 \times 0.3) \\ = \underline{\underline{14040}}$$

(e) Yes it is optimal for Jane as the monthly revenue of Jane's restaurant depends on Jim's efforts. If Jim will put low efforts, the revenue will also be very low and if Jim will put high efforts the revenue will also be high.

(f) If Jim was risk averse then the value of S must be less than 0.3 because if Jim does not want to take risk then why will Jane pay him high amount.