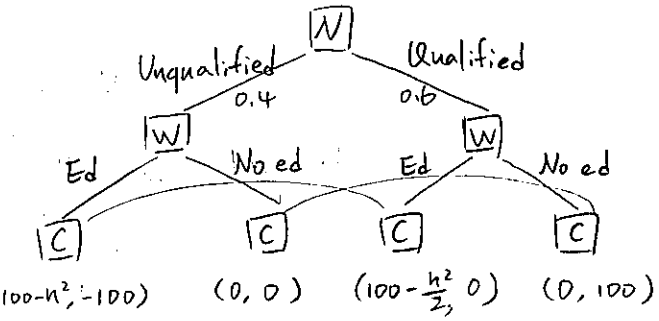
Strategic Game Theory HW# 3 [redacted]

(CH 8)

70/80

U3.

Good Job

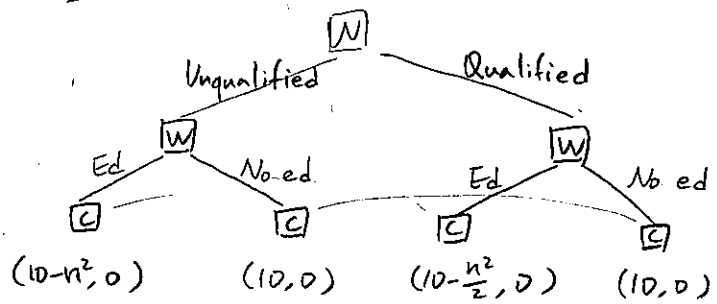


$(100-n^2, -100)$ $(0, 0)$ $(100-\frac{n^2}{2}, 0)$ $(0, 100)$

⇒ $(100-n^2, -100)$ $(60, -60)$ $(100-\frac{n^2}{2}, 0)$ $(60, 40)$

↑ signal unavailable

Bad Job



$(10-n^2, 0)$ $(10, 0)$ $(10-\frac{n^2}{2}, 0)$ $(10, 0)$

(a) 若 company 相信 educated 的 worker 都是 Qualified workers,
沒有 educated 的 都是 Unqualified workers

⇒ $100-\frac{n^2}{2} \geq 0$, $200 \geq n^2$ → $n \leq 14.1421$

$100-n^2 \leq 0$, $100 \leq n^2$ → $n \geq 10$, minimum $n = 10$ ※

(b) Signal unavailable 後, Qualified 及 Unqualified works 皆不會 educated,
對兩類的 works 來說, 選 Good Job 都比 Bad Job 賺的多。
Good Job 可拿到 60, Bad Job 拿到 10。Qualified 的机率較高, 會先把 Good job 填滿, 因此會受益。
Workers will gain and company will loss from this change. ※

$E(\text{Good Job}) = 0.6 \times 100 + 0.4 \times 0 = 60$

$E(\text{Bad Job}) = 0.6 \times 10 + 0.4 \times 10 = 10$

在 signal F,

Qualified 去 Good Job 的 payoff $= 100 - \frac{10^2}{2} = 50 < 60$

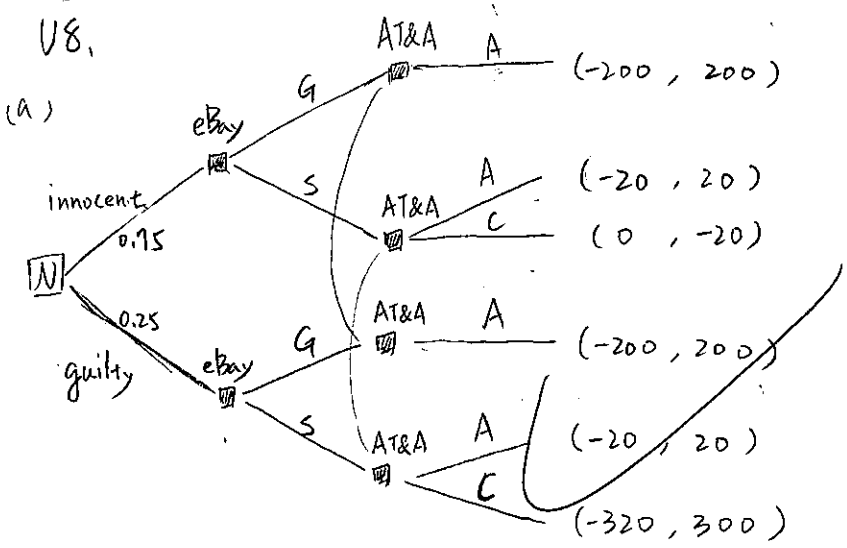
Unqualified 去 Bad Job 的 payoff $= 10 < 60$ > 皆 gain from this change

CH8

(eBay, AT&A)

U8.

(a)



(b) eBay has incentive to bluff

∵ eBay 有較多資訊，eBay 要讓 AT&T 覺得他是 innocent，使損失較少。

(c)

AT&T

eBay	(G, A)	(S, A)	(S, C)
i	(-200, ~~200~~)	(-20, 20)	(0, -20)
g	(-200, 200)	(-20, 20)	(-320, ~~300~~)

if eBay innocent,

eBay ⇒ G , AT&T ⇒ A , payoff = (-200, 200)

10

CH9

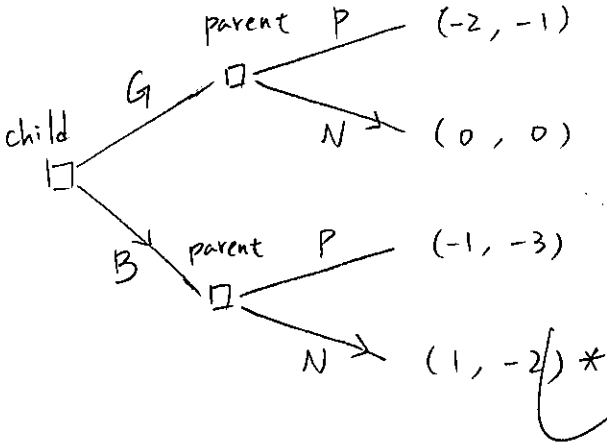
U2.

(a)

child \ parent	P	N
G	-2, -1	0, 0
B	-1, -3	1, -2

equilibrium ⇒ (B, N) (child, parent)

(b)



child ⇒ (B)

parent ⇒ (N, N)

equilibrium ⇒ (1, -2) (child, parent)

(c)

child \ parent	P	N	if G, N	if G, P
G	-2, -2	0, 0	0, 0	-2, -1
B	-1, -3	1, -2	-1, -3	-1, -2

parent has 4 pure strategy

* equilibrium

- child → G, parent → if G, N ⇒ (0, 0)
- child → B, parent → if G, P ⇒ (1, -2)
- child → B, parent → N ⇒ (1, -2)

(d) 在(b)是由 child 先選策略，再由 parent 選策略。對 child 來說，選 B 是最好的，因為可得到較高的效用，又不會被處罰。

但在(c)，child 決策前，先得到了"P if B"的資訊，那選 B 對 child 反而是不利的，因此 child 會改選 G。而在上面的 threat，合理的威脅為 if G, N，得 payoff 為(0, 0)。