

**Problem Set 2 – Solutions**

1. a. Impeachment is a dominant strategy for both player. Thus equilibrium is {I, I}.
- b. Impeachment is a dominant strategy for Time, not Newsweek. Thus equilibrium is {I, FC}.
- c. No dominant strategies. Two equilibria (in “pure” strategies): {I, FC} and {FC, I}.

2. a.

		City		
		10	20	30
Metro	10	16, 16	12, 24	7, 21
	20	24, 12	14, 14	8, 12
	30	21, 7	12, 8	7, 7

- b. {20,20}
- c. Same. (Notice that 20 is a dominant strategy for both players. Thus there is no "first mover advantage.")

- 3.

- a. I: {a1, b1}; II: {a1, b2}; III: {a1, b1} and {a2, b2}
- b. Game III. If one accepts Shelling's "focal point" concept, then {a2, b2}
- c. Game I
- d. No. The game is not symmetric.

4. a.  $1,200q_1 - 5q_1^2 - 5q_1q_2$
- b.  $q_1 = 120 - 0.5q_2$
- c.  $q_1 = q_2 = 80, P = 600, \pi_1 = \pi_2 = 32,000$

5.  $Q = 200; P = 400$

- a.  $P = 120 - 0.18Q$
- b.  $2q + 10$
- c. Set  $MC = P$
- d.  $25P - 250$
- e.  $P = 30, Q = 500$
- f.  $q = 10$  (at this level, firm profits = 0 because  $TR = TC = 300$ .)

6.

	Monopoly	Cournot	Stackelberg	Competititon
$q_1$	--	760	1140	1140
$q_2$	--	760	570	1140
$Q$	1140	1520	1710	2280
$P$	630	440	345	60
$\pi_1$	--	268,800	304,900	-20,000
$\pi_2$	--	268,800	142,450	-20,000
$\pi$	629,800	537,600	447,350	-40,000

7. a.  $q_1 = q_2 = 9.166$ ,  $P = 76.667$   
 b. Show that  $DWL(1) = 378.125$  and  $DWL(2) = 168.063$ .  $DWL(2)/DWL(1) = 44.4\%$
8. Consult the conditions conducive to maintenance of collusion and discuss.
9. a. In Bertrand competition,  $P = MC = 10$   
 b.  $Q = 45$ ,  $P = 55$ , joint profits = 2,025  
 c. Think of the game as a 2X2 matrix with (0,0) and (1,012.5, 1,012.5) as payouts on the diagonals, and (2025, 0) and (0, 2025) as payouts on the off-diagonals. Critical discount rate is 1.  
 d. If  $h$  is less than 1, then critical discount rate rises. (See Cabral's discussion.)  
 e. If  $g$  is negative, then critical discount rate rises.
10. Sum of pre-announcement market values (or market capitalization") is 9 billion. Post merger value is 8.8 billion. Apparently investors do not like the merger.