



Final Exam “Economics of Electronic Business”

Please answer all of the following questions. Do not expect all numerical results to be integers. Please explain all your answers briefly, so that calculations and derivations can be fully accounted for. The use of calculators is permitted in accordance with the regulations of the faculty’s examination office.

1) The “super pain killer” drug is sold by four online shops only. The tablets always come in packs of 160 and there are no differences in the quality. The prices, however, may differ. The online drugstore “DrugsOnSale.com” sells the drug at a discount price p_d per pack. The three online pharmacies charge the higher price p_p . The cost per pack for all shops is \$50.

A continuum of consumers, indexed by s on the interval $[200, 800]$, demands the tablet packs. Consumers with high s , have high and consumers with low s , have low search costs. The former buy at random and the latter search for the lowest price. The consumers only know the average price p . The cost function C determines whether a buyer invests in searching the lowest price (i) or does not (ii).

$$C = \begin{cases} p_d + 0.4 * s, & (i) \\ p, & (ii) \end{cases}$$

- Derive the indifferent buyer \hat{s} as a function of the two prices.
- Calculate the expected number of buyers $E[b_d]$ at the discount drugstore and the expected number of buyers $E[b_p]$ at the online pharmacy sites, as a function of the two prices.
- The online drugstore takes the pharmacies’ price p_p as given and maximizes its expected payoff $E[\pi_d]$. Derive the best-response function (p_d as a function of p_p).
- The pharmacies take the discount price p_d as given and maximize their expected payoff $E[\pi_p]$. Derive the best-response function (p_p as a function of p_d).
- Derive equilibrium prices.
- What happens to the two prices, if the search cost increases? Briefly explain your answer.

2) Hot On Group (HOG) and Precious Image Group (PIG) compete in the market for trendy television game shows. Both groups have creative teams working on innovative show designs, but also engage in the copying of a competitor’s new show and in the “revamping” of old shows, i.e. in creating new looks and labels for re-launches of old shows. The cost of an entirely new game show creation is estimated at \$20 million. The cost of copying a new show is estimated at \$2 million (only one copy is possible) and revamping a show costs \$4 million. A show is expected to generate revenues as follows:

	super hit		hit		flop	
	probability	revenue	probability	revenue	probability	revenue
new show	0.50	\$260 million	0.30	\$80 million	0.20	\$10 million
copied show	0.20	\$160 million	0.60	\$40 million	0.20	\$10 million
revamped	0.10	\$120 million	0.50	\$20 million	0.40	\$10 million

- Are TV-shows information goods? Explain your answer briefly.
- Assume that HOG is a monopolist in the market (i.e. PIG does not exist). Calculate HOG’s expected profits for investing \$20 million in a single new show and for investing \$20 million in re-vamping old shows. Does HOG create a new show? Explain your answer based on the expected payoffs.
- Assume HOG invests in a new show and PIG enters the market shortly thereafter. What is PIG’s optimal investment plan for the \$20 million? Calculate the expected profits to explain your answer.
- Assume HOG and PIG combine their forces and their budgets of \$20 million each. How many new shows, copied shows, and/or revamped shows will exist? What is the expected payoff for each firm, if they split the total payoff equally?