14.27 Problem Set #6

Due on the day of lecture on Asset Pricing Bubbles.

1. Consider the following model of a monopoly price search engine. Suppose a consumer wants to purchase a good from one of N producers. The gross utility he receives if he buys product i is v_i. The cost of production of good i is c_i. Assume that $v_1-c_1 > v_2-c_2 > ... > v_N-c_N$. Assume that these products are commonly known by all the producers and by the search engine, but that the consumer cannot search for and buy the goods himself. He must use the price search engine.

Model the search process as having the following timing. First, the search engine simultaneously queries the firms and asks each for a price p_i it is willing to give the consumer and for a kickback x_i it is willing to pay the search engine if it is chosen. Second, the search engine reports one firm's price to the buyer. Third, the buyer makes a yes/no decision on whether to buy the good. If he says yes, he pays the producer, gets the good and the producer pays the kickback. If he says no, no trade occurs and everyone's payoff is zero.

(a) Show that in any equilibrium of this game the buyer gets zero consumer surplus. Which firm supplies the good? What is the profit of this firm and of the search engine?

(b) Suppose that if the consumer rejects the price offer he receives from the search engine, he has the opportunity to randomly visit one store and purchase the good at the price posted there. (Suppose that there are no other potential consumers and the firms can correctly infer that the consumer has turned down the offer to buy from the search engine.) Will this affect the answer to part (a)? Would the answer be different if the consumer could buy at the price the firms had quoted to the search engine? What would happen if the consumer visited two randomly selected firms?

(c) Go back to the consumer being unable to search on his own, but suppose that the government passes an "Honest Search Engine" law that requires search engines to always show consumers the price offer that maximizes v_i-p_i. How will consumer surplus and search engine profit change?

2. Consider the following model of a buyer's broker. The consumer wants to buy a good and knows how to get it himself at a price of p'. Assume that his utility if he buys at price p is v-p with v > p'. He also knows that if the broker spends h hours searching for the good and bargaining he will be able to buy it at a price of p' - s(h). Suppose that the buyer's broker will take on jobs if and only if the effective hourly wage is at least w.

(a) Let h* be the number of hours worked that maximizes the sum of the buyer's and broker's surplus. Show that h* satisfies s'(h*)=w.

(b) What would happen if the buyer hired the broker, offered to pay him a fixed fee of wh*, and had to accept whatever price the broker found for him?

(c) Show that the buyer can get the broker to exert the optimal effort by a signing a contract that says the broker will get paid wh* + (p' - s(h*) - p) if he finds the good at a price of p.

(d) Is a contract similar to the one above feasible if the buyer does not know p' and the function s(h)? How might this effect the feasibility of going into business as a buyer's broker? How might price search engines on the web be able to overcome this difficulty?

3. Pick three proposed flights and look for each one on two different travel websites. How do the search results differ? Do you seem to be getting an unbiased listing of the best flights?