Economics 316

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Problems for Tutorial 5

1. Consider a (realistic?) variant of the model of expert diagnosis in which the experts are not entirely competent. Assume that each expert always correctly recognizes a major problem but correctly recognizes a minor problem with probability $s < 1$; with probability $1 - s$ she mistakenly thinks that a minor problem is major, and, if the consumer accepts her advice, performs a major repair and obtains the profit π. Maintain the assumption that each consumer believes (correctly) that the probability her problem is major is r, and assume that a consumer who does not give the job of fixing her problem to an expert bears the cost E' if it is major and I' if it is minor. For simplicity, assume that $\pi^* = \pi$.

   Suppose, for example, that an expert is honest and a consumer rejects advice to obtain a major repair. With probability r the consumer's problem is major, so that the expert recommends a major repair, which the consumer rejects; the consumer bears the cost E'. With probability $1 - r$ the consumer's problem is minor. In this case with probability s the expert correctly diagnoses it as minor, and the consumer accepts her advice and pays I; with probability $1 - s$ the expert diagnoses it as major, and the consumer rejects her advice and bears the cost I'. Thus the consumer's expected payoff in this case is $-rE' - (1 - r)[sI + (1 - s)I']$.

   Construct the payoffs for every pair of actions and find the mixed strategy equilibrium (equilibria?) when $E > rE' + (1 - r)I'$. Does incompetence breed dishonesty? More wary consumers?

2. Consider a variant of the model of crime reporting studied in class in which n_1 witnesses incur the cost c_1 to report the crime, and n_2 witnesses incur the cost c_2, where $0 < c_1 < v$, $0 < c_2 < v$, and $n_1 + n_2 = n$. Show that if c_1 and c_2 are sufficiently close, then the game has a mixed strategy Nash equilibrium in which every witness's strategy assigns positive probabilities to both reporting and not reporting.