PLCY 289 Problem Set 2

Here are some additional questions on uncertainty and imperfect information. Do not hand these in—they are for your pure enjoyment.

1. A landowner is devising a wage scheme which will induce a risk-averse farmer to work responsibly. If the worker is responsible the probability of a good harvest $p_1$ and if the farmer shirks the probability of a good harvest is $p_2$ ($p_1 > p_2$). The farmer has a disutility of work $d$ and faces an alternative wage $w_a$. The landowner is risk neutral and will specify a wage package $\{w_1, w_2\}$ which depends on the type of harvest realized ($w_1$ is the wage if a good harvest and so on). Write down and explain the landowner’s maximization problem as fully as possible. Under what circumstances will the landowner not bother attempting to elicit responsible behavior?

2. There are two types of workers a firm can hire: H and L. The marginal productivity of H is $400$ and their opportunity cost is $250$, while the marginal productivity and opportunity cost of L is $200$ and $100$ respectively. If the firm offers a wage of $200$ who will it hire and what will its profits be? What if it offers a wage of $240$? What if it offers a wage of $275$? [This phenomenon is known as efficiency wages.]

3. The phenomena of moral hazard and adverse selection are important issues in agriculture, particularly in developing countries.
   a. Why do these two phenomena occur in this industry?
   b. For the following three types of agricultural contracts, explain the risk sharing arrangement implied and the circumstances under which they would be observed: fixed wage where the landowner pays a fixed wage to the worker irrespective of output, sharecropping where the landowner and worker share the output, and fixed rental where the laborer pays the landowner a fixed rate and keeps all the output.

4. In the article by Dixit on the reading list, the author mentions some extensions to the standard theory of incentives which are especially applicable to public sector organization.
   a. In multi-principal and multi-dimensional scenarios, substitutability and complementarity of effort have an important influence on the incentive structure. Explain why this is the case. Under what scenario will incentives be higher? What are the implications for the organization of activities across units or institutions?
   b. How do repeated interactions between principal and agent affect the incentive scheme offered by the principal? In particular, is it a good idea to provide incentives for aggregate output over multiple periods, or are period by period incentives better?
   c. How might ‘career concerns’ influence incentives in a principal-agent relationship?
   d. In multiple tier models where an agent is also the principle for another (different) agent, there is the possibility of collusion. Explain why this can happen and what the implications are for incentive payments.