Applied Microeconomics: Supervision 5

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(To be completed after week 3. The second problem question will be marked)

Short Questions

1. In the US, private health insurance is usually purchased by groups rather than individuals. For example, most people are insured through their employer or their spouse's employer. Explain.

2. "Almost everyone suffers from a common cold now and again. Therefore it would be good if everyone purchased insurance to cover the cost of cold medicine and time lost when they have a cold." Comment.

3. Why does rate-of-return regulation lead to excess investment in capital?

4. In what circumstances will RPI-X regulation lead to insufficient investment in cost reduction? How quickly does the X component get revised - more quickly means less productive efficiency because cost savings are captured.

Problems

1. (2014 Exam Paper) A worker chooses how much effort to exert without knowing the state of the economy. She has preferences over her (uncertain) income and effort as follows:

$$U(w,e) = E[\widetilde{w}] - \frac{1}{2}\rho var(\widetilde{w}) - \frac{e^{1+\lambda}}{1+\lambda}$$

Effort has an effect on profits as follows:

$$\pi = x + e$$

where x is the state of the economy, which is unknown to the worker and is unobservable to the firm's owner. Both the worker and the firm's owner observe profits.

(a) How might the firm's owner use information on profits to incentivise the worker?

(b) Suppose now that the firm wants to maximise profits over a long horizon, with effort being chosen in each period by the worker. Suppose further that the random variable, x, follows the process:

$$x_{t+1} = \rho x_t + \eta_{t+1}$$

where η_{t+1} is independent over time. How should the intensity of the firm's incentives change over time? Does your answer depend on the value of ρ?

2. (2019 Exam Paper, modified) Consider a linear contract between banks and bankers. This linear contract is initially specified as

$$w = \alpha + \beta(e + x)$$

where w is the wage of the banker, e is the variable describing banker's level of effort, x is the information noise variable with mean 0, β is a parameter that measures the intensity of intensive. The cost function of effort $c(e)$ has features $c'(e) > 0$ and $c''(e) > 0$

(a) Now suppose European Banking Authority (EBA) introduces a new regulation to reduce bonus to bankers. To comply with this new regulation, banks revise the contract into the following form:

$$w = 2\alpha + \frac{\beta}{2}(e + x)$$

Discuss the optimal effort level e^* under this new contract.

(b) Assume the participation constraint keeps unchanged $\bar{U} \leq U$, where $\bar{U}$ is the utility when the banker chooses the best outside option. Will the expected wage $E[w]$ increase or decrease after the contract is revised? Please show your proof.

(c) Now assume EBA wants to put a strict 100% cap on the banker's bonus. To comply with this new regulation, banks revise the contract into the following form:

$$w = \begin{cases} \alpha + \beta(e + x) & \text{if } \alpha > \beta(e + x) \\ 2\alpha & if \alpha \leq \beta(e + x) \end{cases}$$

Discuss intuitively about its productive efficiency and allocative efficiency comparing with the initial linear contract $w = \alpha + \beta(e + x)$.