Technische Universität Dresden
DREWAG-Lehrstuhl für Energiewirtschaft (EE^2)

Lecture Note 4

Please answer the following questions:

1. Explain in detail the following assumptions of the canonical model of regulation:

   a) Regulation is subject to adverse selection and moral hazard.
   b) The realized cost, production and prices are verifiable, but the regulator cannot distinguish the different price components.
   c) The firm and the regulator are risk neutral with respect to income.
   d) The regulator is benevolent.

2. Explain the following results of the canonical model of regulation:

   a) Implementation by a menu of linear contracts
   b) Basic trade-off between rents and allocative inefficiencies

3. From "the dichotomy between pricing and cost-reimbursement rules" the following first order condition is obtained:

$$\frac{P_k - C_k}{P_k} = \frac{\lambda}{1+\lambda}\frac{1}{\hat{\eta}_k} + \left[\frac{\lambda F(\beta)\psi'(e)}{(1+\lambda)f(\beta)P_k}\right]\frac{dE_\beta}{dq_k},\ (k = 1,...,n)$$

   a) Identify and interpret the components of this condition.
   b) What does the "cost-reimbursement rule" mean?
   c) When does the "dichotomy" between the pricing and cost-reimbursement rules hold? Why?

4. Which assumptions must be added (or deleted) from the canonical model of regulation so that the price variable becomes an incentive tool?

5. What is the "hidden side" of the price-cap proposals? In a price cap, how the choice of prices can be decentralized to firms?

Exercise:

The regulator faces the following optimization problem (the cost function has the form $C = \beta - e$):

$$max \int_{\underline{\beta}}^{\overline{\beta}} \{S - (1+\lambda)(\beta - e + \psi(e)) - \lambda u(\beta)\} f(\beta) d\beta$$

$$s.a. \quad \dot{U}(\beta) = -\psi'(e(\beta)) \qquad \forall \beta,$$

$$U(\beta) \geq 0 \qquad \forall \beta.$$

Find the equilibrium condition for the effort that the firm must exert. What does that condition imply? (Remember that under perfect information, $\psi'(e) = 1$).