Seminar problems, ECON4325 , week 11.

1. Information problem in market for loans.

Consider a situation with two types of borrowers and a lender, all maximizing expected return. Assume there are two types of borrowers, $i = 1, 2$, and two possible outcomes of each borrowers project, $j = 1, 2$. Assume that the number of each type of borrower is equal. Assume that the lender cannot distinguish between types of borrowers. Let R_i^j be the return on borrower $i's$ project in case of outcome j.Let p_i^j be the probability of outcome j for borrower i. Assume the lender's alternative return is the risk free rate R.The lender is considering a contract with borrowers, where there is no collateral. The lender gets back $\hat{R}$ if the project return R_i^j is at least equal to $\hat{R}$, and R_i^j if $R_i^j \leq \hat{R}$.Normalize the amount borrowed to each project to 1.($B = 1$)

a) Is this a hidden information (possibility of adverse selection) problem, or a hidden action (possibility of moral hazard) problem?

b) Write down the expression for the borrowers profit $\pi(R_i^j, \hat{R})$ and the expression for the lenders gross return $\rho(R_i^j, \hat{R})$ as functions of the gross return on the project and the contracted $\hat{R}$.

c) Assume for a moment that the lender has perfect information about the types - she can distinguish between the types.

Assume $R_1^1 = 1.1, R_1^2 = 1.3$, $R_2^1 = 1.15, R_2^2 = 1.25, R = 1.2$ and $p_1^1 = p_2^1 = 0.5$. What kind of contract would the lender offer the borrowers?

d)Now assume that the lender cannot observe the borrower type. What kind of contract will the lender offer? Will there be credit rationing?

2. The Financial accelerator.

a) Log linearize eqn 4.4 and 4.5 in the Bernanke, Gertler and Gilchrist paper, in order to get equations (4.17) and (4. 18).

b) Given exogenous k, x, y, r and n, how would you proceed to desribe the dynamics of q and r^k using equations (4.17) and (4.18) in the paper? You do not need to solve for q and r^k, just set up the problem and explain your approach. How would you evaluate the stability of the system?