

## **Economics of Banking, Exam 11.8.2017**

### **Guideline for solution**

#### **Problem 1**

The problem deals with the deposit contracts of a bank, treated in several chapters of the book (ch.1, ch.14). Since the initial situation is a rather simple one of liquidity transformation, in accordance with the Diamond-Dybvig model, one would expect the contract to reflect the need for depositor to withdraw his invested money at any time, with a premium for late withdrawals.

The new investment opportunity for the potential depositors changes the situation, the Diamond-Dybvig model will no longer apply without corrections, since the probability of early withdrawal will depend on the character of investment in TV-entertainment, common for all investors, so that the independence assumption of the model is violated. If the bank still wants to attract deposits, the conditions for withdrawal must be revised so that less is repaid if TV-entertainment turns out to be a lucrative business than if this is not the case.

#### **Problem 2**

We have here a problem of loan contracts and credit rationing, dealt with in chapters 5 and 6. There is asymmetric information and some collateral is posted. If the type of uncertainty is as in the Stiglitz-Weiss model, then the net expected profit function remains convex even when there is some collateral, and therefore increased riskiness entails a higher expected profit (If risk is modelled as a De Meza-Webb, then relationship will however be negative, since higher probability of the bad outcome leads to lower average profit). An overall increase in riskiness will therefore lead to a general increase in demand for credits.

Banks who want to maximize profits should try to avoid the risky borrowers as far as possible, and this since a higher repayment rate will increase the proportion of risky borrowers, it is better to use collateral as an instrument. However, competition between banks may preclude a general rule of full collateral, but then the combination of repayment and collateral may be used as a price discrimination device separating the borrowers according to riskiness, so that firms will themselves report their riskiness in the choice of their preferred combination.

#### **Problem 3**

The theme of this problem is described in chapters 1 and 6 as well as in other contexts. The basic problem is that of moral hazard related to the revelation of investment projects to the lender. Borrowers may prefer high-risk investments which yield a large outcome with a small probability, at least if they may default at no additional cost in the case of failure of the investment. This choice of investment has as result that the loan contract would result in a net loss to the lender, who will therefore deny credits.

The presence of an upside means that the profitability of risky investments to the lender is increased, and similarly it is reduced for the borrower, and this may shift the choices of investment towards the less risky variants.

When the interest rate is volatile, the repayment rates of the contract may turn out to be so high as to induce moral hazard, and consequently the contract should rely more on upsides than on fixed repayments.