

**Economics of Banking**  
Exam 25 May 2019  
(with outline of suggested answers)

**Problem 1**

A country has a large number of savings banks which receive deposits from households and are allowed to invest only in government bonds and similar low-risk securities. The individual households choose their savings bank with regard to the best rate of interest and the personal services that they obtain. It has been argued that the deposit rates in this sector are too low, but the banks argue that the competition is very active and their profits are small.

Formulate a model which describes the competition as well as the formation of interest rates in this market. Discuss whether the market is efficient, and if not, give proposals for obtaining optimality.

After a round of modernizations all banks are allowed to perform all kinds of financial intermediation, and depositors are protected by a mandatory deposit insurance. Give a theory-based assessment of the effects of this liberalization on deposit and loan rates as well as the overall riskiness of the financial sector.

**Brief answer:**

The topics treated in this problem are described in Chap. 11 on competition and risk-taking in the financial sector. In the first part of the problem, where banks are engaged only in taking deposits, the situation (many banks doing similar business, with some slight consumer preferences, low or zero profits but prices above marginal cost) seems to be one of monopolistic competition, as described by the circular city model of banking. The deposit rate reflects the individual preferences which in this model is formalized as a consumer cost depending on closeness to the preferred bank, and banks will open up until profits are zero, taking the fixed costs into consideration.

This market is inefficient, there are too many banks compared to what is socially optimal, and the inefficiency could be improved and even eliminated by introducing a lump-sum tax (independent of the size of the balances) on each bank.

In the second part, the situation can be analysed in accordance with the standard Allen-Gale model of bank competition and risk. If banks are themselves choosing investments and thereby the risk profile, the overall riskiness of the bank sector (in a symmetric equilibrium where banks choose quantities given the choices of the other banks) will increase as the number of banks gets large. Given the large inflow of former savings banks into the banking sector, one should expect an general increase in riskiness. This conclusion should however be modified if banks are choosing loans to entrepreneurs, who invest according their own choice, influenced by the loan rate, then the opposite effect (riskiness decreases as number of banks increase) may occur.

**Problem 2**

A country has an independent organization taking care of deposit insurance and a central bank which may assist in the case that a bank experiences a run. Liquidity problems may however be a

sign of more fundamental problems, so that it might be relevant to terminate the activities of the bank and liquidate its assets and liabilities. Give a discussion, from the point of view of society, of whether it is best to let the decision on liquidation of a bank be taken by (1) the central bank, (2) the deposit insurer, or (3) the other private banks. Does the solution depend on whether one of the three mentioned parties has better access to information about the situation of the troubled bank, and if so, how?

To improve upon these decisions it is decided to create a special government agency covering all the administrative costs (legal assistance, paper work etc.) connected with the liquidation of a bank. How will this influence the decisions to close a bank in temporary troubles?

**Brief answer:**

The relevant topics are treated in Chapter 17 on reorganization and closing-down of banks. The first part of the problem points to the Repullo model of choosing the right institution for closing a bank in trouble. Here the decision depends on two signals, one (liquidity need) which is observable, and another (expected future gains) which may possibly be observable but which is not contractable in the sense that it can be used in setting up general rules of behavior. It turns out that the institutions will act in a different way if in charge, and it might be preferable to let the responsibility shift between them depending on the size of the liquidity need. The other private banks are not explicitly present in the model, but it can be argued that each of the other banks will be guided by the future gains rather than by the actual liquidity need. If only one of the institutions (1) and (2) can observe the liquidity need, then it may find it useful to misinform the other one depending on the situation.

For the second part, it can be seen from the model that the behavior of the central bank and the deposit insurer is heavily influenced by the administrative and legal cost of closing down a bank. If this cost is reduced the central bank will demand a much higher future gain in order to assist, in the limit it would refrain altogether from assisting, whereas the deposit insurer would behave largely as before, with a somewhat higher demand to future gain. The private banks are of course not affected.

### **Problem 3**

In the agricultural sector of a country there has been widespread complaints over the credit conditions. The eastern part of the country has a more stable climate whereas the western part is subject to occasional draughts with resulting smaller harvests, and consequently loan rates have been higher for the farms in the west. The banks argue that if both should have loans at the same rate, it would be too expensive for the eastern farmers who would then seek alternative sources of financing.

To prevent any inequality in the treatment of borrowers, it is decided that banks may not distinguish between farms according to their location. How should the loan contracts of the banks be formulated if the farmers of both regions must be kept as customers?

As a consequence of liberalization of financial markets, several foreign banks establish themselves in the market. What are the consequences for the loan contracts of the types of farmers?

Brief answer:

The topics of the problem are treated in Chap.6 on credit rationing, more specifically, the relevant theory is the Bester model of adverse selection with two types of borrowers. In the situation considered, it is possible to observe the borrower type, but due to the legal restrictions, the bank cannot use this information in setting up the contract, so that formally, the model with hidden knowledge applies.

In the model, both types may be served if the bank used both repayment and collateral as instruments, offering the borrowers a choice between two different contracts (a separating contract). One of them (intended for the risky borrowers) with high repayment but no collateral, and another one with lower repayment but with a certain amount of collateral, sufficient to secure that the high risk borrowers will not prefer this contract to the one intended for them. The solution can be graphically illustrated in a collateral-repayment diagram (this illustration uses a zero-profit assumption but the same situation would occur if profits are nonzero).

When there are more than one bank in the market, the notion of an equilibrium must be specified (no competitor can offer something better one or both types of borrowers and earn positive profits), and it depends on the details of the model (again illustrated in diagrams) whether such an equilibrium can be established.