

**Economics of Banking**  
**Exam 23 August 2019**  
**Hints for solution**

**Problem 1**

A small country, where fishery and industries based on fishery are the main sources of income, has only a few banks, and all are specialized in serving the domestic public with regard to both savings accounts and credits. It is decided to introduce a mandatory deposit insurance, administered by an independent non-profit organization. Its first task is to decide on the financing of this insurance. Give a survey of the basic principles and their consequences.

After several years of prosperity, the economy of the country experiences a downturn, and some of the banks become insolvent and cease their activity. It then turns out that the deposit insurance organization has insufficient funds so that the government has to step in. Explain what went wrong.

The textbook background is Chapter 15 on deposit insurance. The basic idea is that of a fair premium, which however does not pay sufficient attention to the underlying risks and their volatility. An alternative is the options pricing approach, according to which the insurance premium is determined as the value to the bank of an option to reimburse all deposits. Deposit insurance premia may have other functions such as encouraging the banks to spread their investments. This is particularly important in the present economy with only two different fields of activity, so that the risks connected with the investments are not independent. Two large correlations may be discouraged by suitably higher payment for deposit insurance.

In all of these schemes for determining the payment for deposit insurance, the riskiness of the bank's loan portfolio enters as an important factor. However, this riskiness must be estimated from the available data, and the data, which are collected during an upturn, will tend to underestimate the failure probabilities of the banks' engagements. Added to this comes the correlation of investments which it is hard to avoid given the country's industrial structure. The result will be that the funds collected are too small to reimburse the losses on deposits.

**Problem 2**

An industry in a country complains that its access to credit is too limited and that credit is too expensive. Many former entrepreneurs have given up and moved abroad, where several of them have been successful. On the other hand, local banks point to a high frequency of bankruptcies which has caused large losses to the banks. The underlying problem seems to be the way in which the entrepreneurs conduct the business once the credits have been granted.

Give a brief sketch of a theoretical framework, which can encompass both of the above observations. What can be done to improve the situation?

It is now proposed that the loan contracts should be formulated not as a standard contract but rather as a participation contract, where the borrower pays back an agreed fraction of the gross income derived from the investment. Give an assessment of this proposal and its consequences.

The textbook background is Chapter 6 on loan contracts and credit rationing, more specifically the role of moral hazard: If the entrepreneurs have a choice between several ways of conducting business, then high rates will make the risky investments more attractive to the entrepreneurs. Since the risky investments fail more often than the less risky investments, more bankruptcies will be observed. The obvious remedy would be to introduce some degree of monitoring of the borrowers once they have obtained credits.

Alternatively, the description of the problem may be interpreted as one of adverse selection (the Stiglitz-Weiss model), although in this case the failures are related to inherent capacities of entrepreneurs rather than to their behavior after having obtained credit. If this is the case, the problem has to do unnecessarily high interest payments, possibly due to lack of competition.

If participation contracts are used instead of standard contracts, the balance between risky and less risky investments changes as the fixed repayment is abolished so that bankruptcies occur less frequently, and the expected gain to the investor from the risky investment is reduced since payoffs have to be shared with the bank. If the problem is due to adverse selection, then the form of the repayment function will matter for the results, and in general participation contracts will only give a minor improvement of the situation.

### **Problem 3**

In a particular region, there has traditionally been a large pharmaceutical industry, and recently many small entrepreneurs have become interested in developing new medical treatments for several types of cancer. The typical developer in this field needs some initial capital, and there is only a small chance of actually finding the right drug. The probability of success can be estimated rather precisely from previous similar cases.

It is argued that the banking sector, which has until now supplied credits to the developers, is inefficient in the sense that it prevents profitable activities, which would be beneficial for the community, to be initiated. Give a theory-based assessment of this argument.

After a long debate on this issue, it is decided to create a specialized non-profit credit institution for drug development, so that credits can be offered in a way, which is tailor-made for the sector. How should the loan contracts be set up?

The theoretical background can be found in Chapter 6 on credit rationing, more specifically in the de Meza-Webb model of over-investment caused by the financial sector: The technologies in the sector is characterized by probability of success which varies from one entrepreneur to another, whereas the payoff given success is the same for all. As a result of the financial intermediation, investments are financed also in cases where the expected payoff for society is negative.

Since the problem arises from a discrepancy between individual and social optimum, the institution should grant loans in such a way that investors want credit only if their projects are socially beneficial. Since the probability of success is known only by the entrepreneur, it may be necessary to introduce a collateral to rule out entrepreneurs who cannot obtain the socially acceptable expected payoff.