Economics of Banking

Exam 25. August 2020

(with hints for solution)

1. *A bank has decided to provide credits for small agricultural producers engaged in ecological farming. The farmers' payoffs are subject to risk arising from many different sources such as choice of crop, weather condition, and consumer demand, and the bank cannot easily verify the results obtained by the farmers. Give a survey of the loan contracts which could be used.*

The bank chooses to use a standard contract, but to avoid losses in this field of business the loan rates must be rather high. The producers complain that this has a discouraging effect on the business conditions, so that the farmers become less dedicated to their work. Give a theory-based suggestion of an alternative loan contract which avoids such negative effects without changing the average profitability of this line of business for the bank.

We are investigating loan contracts under asymmetric information (Ch.5 in the textbook). Since the asymmetry opens up for opportunistic behavior by the debtor, some additional features are needed to secure repayment. The main cases are

(a) possiblities of monitoring at a cost, so that the information provided by the debtor may or may not be verified: If the loan contract is incentive compatible and efficient, then it must be the standard contract. A variation on this is

(b) cost connected with hiding the true outcome. Finally, an alternative way of getting information about outcome is

(b) threat of termination (for loan contracts which are nenewed regularly)

An alternative to the standard contract, and one which specifically addresses the problem of debtor's own effort, is the incentive contract under moral hazard, for which everything is paid back at low and medium outcome levels, whereas nothing is paid back when the outcome is sufficiently high. It may be noticed that this type of contract is tailored for a case where effort is not observable whereas outcome can be observed, a situation which only to some extent fits with our present case. We should then add a monitoring of outcomes, which as before will make it costly, and this cost should not exceed the gains obtained by the higher effort provided.

2. *In the aftermath of the corona pandemic, a number of small industrial enterprises want to adapt their production to the needs for medical equipment, and they apply for capital from the banks. The demand for the output is high and profits are known to be acceptable on the average, but since the distribution channels have to be established by the producers* *themselves, something which will depend on the skills of the entrepreneurs, the payoffs are subject to considerable risk.*

Entrepreneurs complain that credit for this type of innovative business is too tight. Give a description of a theoretical model which is suitable for assessing the justification of this viewpoint, and give suggestions for what should be done if the managers are right.

Under the threat of a resurgence of the pandemic, it is decided that all the distribution channels for medical equipment should be centralized under control of a government office. The new innovative producers generally deliver high quality output, but in a few cases the production lines are malfunctioning and the whole production must be destroyed. Do these new circumstances change the situation in the credit market and if so, how?

We have a case of capital rationing (Ch.6 in the textbook). The situation described is one where the firms have more or less the same average outcome which however is subject to random variations that differ from one firm to another, and as such it can reasonably be modelled using the Stiglitz-Weiss approach. It is therefore to be expected that credit will be too tight, and due to adverse selection the producers with low risk choose not to apply for credit.

If the model is a correct description of the market, then credit could be made less tight either by collecting additional information about the riskiness of the individual firm, if this is possible, or by adapting the loan contract reducing the advantage of riskiness, for example by introducing an upside for the bank.

This situation changes when the distribution channels are organized by a third party, and the market will now be better described by the deMeza-Webb model where the firms differ in probability of success whereas the outcome obtained given success or failure will be the more or less the same. The conclusion for the market will be that credit will be forthcoming rather too abundantly, allowing for firms which may be working inefficiently from a societal point of view.

3. *After a period of instability in the financial sector, a country has introduced a system of deposit insurance managed by a private institution. There has been some debate about the size of the insurance premium, and the institution has found it necessary to ask for detailed knowledge of the assets of the insured banks in order to determine its insurance premium. Give a theoretical appraisal of this policy and its impact on the deposit insurance premium.*

After its first year of functioning, the deposit insurance organization has been involved in several bank closures, and it is argued that banks in trouble should rather be supported by loans from the central bank. Give an assessment of this argument based on relevant theory.

The problem refers to the theory of deposit insurance and lenders of last resort (Ch.15-17). The determination of an insurance premium involves properties of the assets already according to the Merton approach, but a more detailed model for determining insurance premia is obtained by taking into consideration the prices at which the assets can be sold in the case of a failure of the bank. This will involve not only the assets of the individual bank but also their correlation with assets held by other banks, since the latter may be the potential buyers of the failed bank's assets. As a consequence the insurance premium will depend on the type of assets held and their value in the case of a default.

Accoring to the Repullo model, the deposit insurance organization may prefer to close down banks even in cases where they are hit by a liquidity problem of rather small size, since the cost of the organization is no higher when closing immediately. This is remedied if there is a central bank acting as a lender of last resort at least in such cases of not too large liquidity problems.