

**Solutions to Exercises in
Economics of Banking
Chapter 16**

1. The problem connected with assistance from the central bank in case of liquidity problems is the possibility of moral hazard in the sense that banks may decide to reduce the size of its liquid assets in order to engage in illiquid assets with a higher repayment. If no dividends can be paid out when the bank has loans from the central bank, then the payoff to shareholders is reduced temporarily, but since the dividends are retained earnings and thus increases equity, there is no loss of income to shareholders, and if share prices remain unaffected, there will be little pressure on management to change the policy of low liquid reserves.

The other part of the reform, which pertains to management payoffs, are more likely to be effective, since a real loss of income is entailed for management. As a consequence, it is to be expected that the banks will seek to avoid being bailed out by the central bank in the case of liquidity shortage, which they will have to prevent by holding larger liquid reserves.

All the previous considerations have been related to liquidity and not primarily to the choice of risk profile in assets, but since banks with risky assets are more likely to be subject to a bank run than banks with less risky assets, it may be assumed that the banks will act accordingly.

2. We have here two investment opportunities, namely the safe investment $1 \mapsto R$ over two periods and the new investment from $t = 1$ to $t = 2$ with repayment \tilde{r} . The bank offering a deposit contract must take into account that in the case where $r > R$, patient depositors will show up as impatient.

In this new situation, deposit contracts must depend on r as well, so that the bank can withstand the demand also when $r > R$, meaning that

$$c_1(r) = \begin{cases} 1 - I + LI & r > R, \\ \frac{1 - I}{\pi} & r \leq R, \end{cases}$$

and similarly

$$c_2(r) = \begin{cases} \frac{(1 - I + LI)r}{RI^{1 - \pi}} & r > R, \\ \frac{1 - \pi}{1 - \pi} & r \leq R. \end{cases}$$

In the case where $r > R$, the bank liquidates its investment (giving LI), and invests the share $(1 - \pi)$ in the alternative technology.

The bank acting in the interest of the individuals would now choose I such as to maximize expected utility

$$E [\pi u(c_1(\tilde{r})) + (1 - \pi)u(c_2(\tilde{r}))]$$

where expectation is taken over the values of \tilde{r} .

Since the contract specifies that all individuals get what they are entitled to at $t = 1$ when $r > R$, bank runs can occur only in the case where $r < R$, and the situation would correspond to the standard bank run, with an LLR playing the usual role.

3. The proposal amounts to reorganizing banks with liquidity problems by selling them to other banks, and letting the central bank provide the necessary liquidity to the other banks. If the transfer of ownership takes place without interfering with the daily business, the consequences would be that nothing really changes, since management remains unchanged and stock owners get the value of the stock, which – at least in principle – should be unaffected by a pure liquidity crisis.

In particular, the arrangement changes little if anything in the risk profile and the liquidity choices of the bank.