Solutions to Exercises in
Economics of Banking
Chapter 15

1. A credit default swap is a promise to pay the repayment stipulated in a given contract. It comes into force when this payment is not delivered according to the underlying contract. In the arrangement outlined, the bank must buy credit default swaps on its assets so that it is guaranteed a repayment such that the value of the assets guaranteed in this way covers the value of all deposits not surpassing €100,000. The arrangement corresponds to an insurance contract, but it differs from deposit insurance in securing incomes from the assets rather than possibilities of paying the liabilities.

Credit default swaps are bought in the market for derivaties and their price reflects the value of the underlying asset. In situations of financial distress, a renewal of the credit default swaps will be increasingly expensive for the banks and may therefore contribute to a final default. Also, it is not easy to provide an ultimate guarantee if the bank gets into problems since the issuers of the credit default swaps may default as well.

2. A simple extension of the model is obtained when it is assumed that there are two families of assets, each having an outcome $A_j > 0$ with probability p_j and outcome 0 otherwise, $j = 1, 2$, where $p_2A_2 > p_1A_1$; we assume that the two assets are uncorrelated. The assets are financed by deposits assured at the premium P. If both assets are held by the bank, expected cashflow of the bank are

$$\mathsf{E}\widetilde{\Pi} = p_1p_2(A_1 + A_2) + [(1 - p_1p_2)D - P], \tag{1}$$

since the bank defaults if either the first or the second asset fails (at least if both assets are held in large enough proportions), and survives only if both succeed.

If only one asset is hold, the expected payment from the deposit insurance decreases. Assuming that A_1 and A_2 as well as p_1 and p_2 are of roughly the same magnitude, then the total effect depends on the size of p_1 (or p_2): If $p_1 = \frac{1}{2}$, then cashflow from assets doubles, whereas cashflow from deposit insurance is multiplied by $\frac{2}{3}$. If however $p_1 = 0.9$, then p_1p_2 is around 0.8, so asset cashflow increases by around 12%, whereas the $1 - p_1p_2 \sim 0.2$ is reduced to 0.1, so that expected cashflow from deposit insurance is reduced to half its size. We conclude that the choice of risk profile depends on the parameter values.

3. The arrangement amounts to changing the burden of insuring depositors from the bank to the depositor, who can use the special deposit insurance institution for this purpose. Presumably the insurance premium will then depend on the risk profile of the bank, so that risky

banks must pay a higher deposit rate in order to compensate depositors for the increased insurance premium.

It follows that the presence of deposit insurance in this form gives the depositors the necessary protection but without creating incentives for increased risk in the banks. The insurance institution must however be independent of the banks in the sense that their funds should be placed in other financial assets.

4. The background for this problem is to be found in several sections of Chapter 15. It should be mentioned that deposit insurance from the point of view of the bank can be seen as an option so that its value can be found using option valuation theory. There is an inherent moral hazard problem in deposit insurance, and suitably formulated it can be shown that a payment according to the value of the deposit insurance is incompatible with profit maximizing behavior of banks.

The demands to the arrangement mentioned in the problem can therefore not all be satisfied by standard methods of financing the deposit insurance, and it might be contemplated to use a method of financing through taxes which are levied not only on banks and their depositors but also on investors not using the banking system.

It can be argued that large banks should pay relatively more than small banks, since small banks are more easily reorganized, possibly sold off to other banks, than large banks, so that the the reorganization of small banks in trouble may be relatively less costly.

5. If the interest on government securities exceeds the deposit rate paid, then the entrepreneur profits directly from the arrangement. To this may be added possible speculative gains, paying depositors by the collateral instead of in cash if the value of the collateral decreases (unless the contract contains specific agreements about haircuts).

Since the deposits are fully collateralized, there is no need for an additional deposit insurance. However, deposit insurance may be introduced and required of financial institutions for other reasons (as indicated in the sections 3 and 4 of Chapter 15), and in this case the above argument does not apply.