

**Solutions to Exercises in  
Economics of Banking  
Chapter 18**

**1.** Following the argumentation in the Allen-Carletti-Marquez model, one finds that the bank will settle down with a capital ratio  $k$  satisfying the constraint

$$k \geq \frac{1}{2r_E},$$

where  $r_E$  is the repayment rate on equity. If this equity rate is subsidized by government, so that the bank itself pays only  $r'_E > r_E$ , then the lower bound for the voluntary capital rate will increase.

It should be mentioned that in the model, a larger capital ratio does not imply that the risk of depositors is reduced, since anyway it is optimal to choose the risk-free version of the investment ( $q = 1$  in the equilibrium).

**2.** According to Modigliani-Miller (which applies in its pure form since taxes have been abolished), the market value of a firm is independent of the way in which it is financed, in particular a higher or lower ratio of equity to market value of all assets (or all debts) is irrelevant for the value of the firm.

However, it should be taken into account that the M-M theorem shows that leverage is irrelevant from the point of view of the owners, which according to the management is also its objective. This objective may not coincide with that of society, in particular if the debtors have less than perfect information about the assets of the bank. Consequently, it should not be expected that capital regulation can be abandoned altogether.

Also the conclusions of the M-M theorem are based on perfect information, so that it cannot be applied immediately without this assumption.

**3.** If the capital charges for operational risk follow the standardized approach, then they differ among the 8 basic business lines in banking. They are particularly low for retail banking, asset management and brokerage, and if the bank may manage to redirect its activities to these fields with little or no reduction in earnings, then it may increase the sum of risk-weighted assets without changing the capital ratio. This means that the riskiness of the banks' traditional business has increased, but it may be argued that it is counteracted by the decrease in operational risk, assuming that the Basel capital charges are an adequate measure of risk.

**4.** Following the reasoning of Huyn and Ree (Section 18.3.2), an increase in the capital charges may lead to either issuing additional shares or reduction of assets by calling in credits, and the model gives some suggestions as to which alternative will be best for the bank's

shareholders, and this will happen if the engagements of the bank is mainly in working capital of enterprises rather than in fixed capital (buildings etc.). This does not translate readily to the present case, but given the recent economic downturn and the expectations of a recovery, banks would indeed prefer to terminate previous contracts with possibly unsatisfactory performance instead of sharing future gains with new shareholders.

The importance of observability is clear, and since the rules entitle the FSA to initiate closure of banks, it should have access not the relevant information about the quality of the bank's assets. If this is not the case, then decisions of the FSA will in many cases result in unjustified closure and subsequent liquidation of banks, something which will have negative consequences for the financial stability.

If the FSA has access to all relevant information but the latter is not verifiable, then the FSA should be endowed with the necessary authority to decide upon whether or not to close a bank which fails to satisfy capital adequacy.

**5.** The fundamental ingredient in the banking system according to Bulow and Klemperer is the pricing of Equity Recourse Notes (ERN), which is the only form of debt open to the banks (apart from the savings-bank accounts which are fully guaranteed by government or invested in government bonds). The banks can invest debt and equity in assets which will be what constitute the value of the bank. The ERN of different issues can be freely traded in the market but are turned into shares according to fixed rules depending on their market value. This guarantees that the bank never can default on its debt.

A restructuring of a part of the financial sector cannot be performed without some interaction on the remaining parts, and there will be effects beyond the mere mechanism of pricing the ERNs:

- (i) Risk taking: Present shareholders will know that the credit policies of the bank will have immediate impacts on the values of the ERNs and the possible extension of the body of shareholders. It does not seem by itself to reduce the possibilities of moral hazard: Risky ventures may result in losses but the loss incurred from an increased number of shareholders and reduced values of shares are no worse than the loss due to a default.
- (ii) Credit rationing problems: This is connected with the relation between the bank and its borrowers, and the way in which the bank is funded seems to have little impact on expected repayments.
- (iii) Risk management: Even though the transformation of debt to equity is automatic and doesn't involve any effort from the side of the bank, the shareholders may well be keen to avoid instances of this transformation, and the consequence would be that the risk management activities will in no way be diminished.