Solutions to Exercises in
Economics of Banking
Chapter 12

1. This is a case where the borrower might engage in looting (in the sense of section 2, bankruptcy for profit). If the prices of the securities bought increases enough, then this increase in value may be paid out as profits. When prices stabilize, the values remaining with the borrower may be insufficent to pay back the loans.

An example will show that this can happen even with 10% equity. Suppose that 100 is borrowed, at an interest rate of 5% over three years with equity 10. If loan is repaid with interests only after three years, and the security portfolio of 110 increases in the first year by 20% to 132, the price increase minus 5% interest on debt, in total 17, is registered as profits. The future interest payment may be considered as an additional loan of size 5, and equity should increase by 3.2 in order to constitute 10% of asset value, and the rest, 23-3.2=19.8, is paid out as dividends.

Next year, prices have stabilized, and security values remain at 132. The firm must now has no earnings, and there is an interest cost of 5.2 which cannot be paid out of equity due to the limit, so the firm defaults already the second year. Note that with an original equity of 10 and a first year payment of 19.8, this produces a reasonable surplus even though the equity is lost.

It is seen that this works since the firm can obtain additional loans in the form of postponed interest payments. If this is not the case, then the scheme will not produce a surplus.

2. The engagement appears as a rather risky one, but otherwise it does not differ markedly from what may otherwise be agreed upon. However, it should give rise to some caution that the applicant has recently paid out very large dividends from this business. This points to the possibility that the loan is may be intended to finance large dividend payments from the profits appearing in the accounts.

If the customer is expecting that an ongoing bubble in the market for real estate is going towards its end, it may be tempting to engage in as many projects as possible which can then be sold off as unfinished projects as llong as the prices are high. If these projects are financed mainly by borrowed capital, taking out large dividends and subsequently defaulting may be very profitable.

3. In the simplest possible case, ignoring transaction cost, a loan with a repayment R and a collateral $\tilde{C}$ with random values will be paid back if $\tilde{C} > R$ and repudiated otherwise. Seen from the bank, the expected profit of this transaction is $\mathsf{E}\left[\min\{\tilde{C}, R\}\right] - \rho$, where ρ is repayment of funding.

If the collateral consists of securities, the size of the collateral may enter the loan contract,

and if the value of the collateral is sufficiently high, cases with $C < R$ can almost be avoided. However, assuming a fixed collateral (as in real estate borrowing), only the repayment rate can be made object of the contract. If many banks are competing, expected profits will tend to zero, meaning that R approaches the value R^* at which $\mathsf{E}\left[\min\{\tilde{C}, R^*\}\right] = \rho$. In the simple case where $\tilde{C}$ takes the values $\{C^l, C^h\}$ with probability 1/2 each, and $C^l < \rho < C^l$, we get that $R^* = \rho - C^h$ (assuming that $\mathsf{E}\tilde{C} \geq \rho$, since otherwise there would be no market for credits with this type of collateral).

Assume now that all collaterals are perfect correlated (as in the housing market), then bank managers neglecting the possibility that $\tilde{C} = C^l$ may undercut competing banks setting repayment at R^* and still earn a profit (assuming that $\tilde{C} = C^h$) as long as $R > \rho$. This may happen if bank managers are expected to be sacked anyway in the case of a downturn. As a result, the repayment rates will be set in such a way that some banks must necessarily default when the downturn occurs.

4. We are here in a situation which bears close resemblance to that treated in the section on evergreening: A default on one of the larger loans in the bank means that some assets have lost value, and the corresponding loss on the liability side of the balance must be taken from the bank's own capital, since the debt remains unchanged. Consequently, the capital ratio,

$$\frac{\text{Value of equity}}{\text{Value of assets}}$$

is reduced by the same amount in numerator and denominator, and since initially it is < 1, its value diminishes (if we consider the capital ratio as determined using *risk-weighted* assets, then the capital ratio is influenced even more). Therefore, the bank must either increase its equity or sell other assets, and both of these approaches can be difficult in the very short run.

The evergreening approach is to roll over the non-performing loan, so that the loss does not figure on the books of the bank, and the problem is then carried over to future considera-tion. If other loans perform well, the net returns on these engagements may be large enough to fill the gap caused by the initial loss, so that when the loss is finally taken, equity plus retained profits are sufficient to cover the loss in asset values with no reduction in the capital ratio.

5. The policy if denouncing other banks as money launders will probably not work in practice, since a message of this type must be based on particular transactions, money transfers from the other bank, but such transfers will involve customers of the bank itself and is therefore also – and mainly – a message about suspected money laundering in the bank itself.

The system of large fines introduced will – if the rules are followed by the authorities – lead to a certain over-reporting, which will be costly to the authorities but probably also to the bank, and the increased cost to and harassment of customers will make the bank less attactive as an off-shore institution, which was in accordance with the intentions, even if it may be achieved at a high cost.

Mutual denouncement of banks may serve as a weapon in the competition between banks for customers, and the general effect will again be an over-reporting of money laundering, reinforcing the effects described above.