

**Solutions to Exercises in
Economics of Banking
Chapter 8**

1. (The text speaks about *two* loans in each bank, but since we do not know the composition of the portfolio, it should be understood as *one* loan in each bank.) Expected value of the loan portfolio in Bank A is

$$500 \cdot 0.8 + 250 \cdot 0.2 = 450,$$

and in Bank B it is

$$500 \cdot 0.5 + 250 \cdot 0.5 = 350,$$

whereas the public considers the portfolios to be identical with value

$$500 \cdot 0.6 + 250 \cdot 0.4 = 400,$$

which is what Bank A would get from immediate securitization. If Bank A informs potential investors, there is a cost of $450 \cdot 0.08 = 36$, so that the bank gets $450 - 36 = 414$. Since Bank A can inform a single market agent about the true value of the loans, it may take out a CDS which pays the difference between the good outcome and the bad outcome, making sure that the investors get 500 in any case. This will cost $(500 - 250) \cdot 0.2 = 50$ (assuming sufficient competition in the CDS market), but the securities will then sell for 500, so that the net revenue from securitization is $500 - 50 = 450$.

2. The CDS will be exercised if the business activity generates a profit less than 2 mio., and assuming normality this is equal to the probability that a standardized normal variable is less than

$$\frac{2 - 4}{3} = -0.67.$$

The probability of this event is 0.251.

3. A buyer of a CDS is obtaining protection against the risk of default on assets yielding an uncertain return. Before a downturn begins, the market has optimistic expectations about future repayments, and therefore protection against defaults can be bought at low prices.

The obvious risk connected with such a policy is that if the downturn is a major one, there will be many of the issuers of CDS who cannot honor their obligations, meaning that the protection bought cheaply turns out to be non-existing.

4. Suppose to the contrary that (q^0, σ^0) is a steady state equilibrium. Then we know that $\sigma^0 \neq 0$ since truthfulness is not an optimal strategy. From (13) with $q_{t+1} = q_t = q^0$ and $\pi_t = \sigma^0$ we get that

$$q^0 = \mu q^0 + (1 - \mu)(1 - \sigma^0) \frac{q^0}{a(q^0, \sigma^0)}$$

or $1 - \sigma^0 = a(q^0, \sigma^0)$. Inserting the expression for $a(q^0, \sigma^0)$,

$$a(q^0, \sigma^0) = q^0 + (1 - q^0)(1 - \sigma^0)$$

and simplifying, we get that

$$q^0(1 - \sigma^0) = 1.$$

This is contradiction since q^0 is a probability and $\sigma \neq 0$.

5. Sale of assets from banks' portfolio is often made necessary either by a fall in the market value of the securities in the portfolio. In order to satisfy capital requirements, the bank must pay back loans, and this can be done only by reducing the portfolio.

The advantage of separating issuers of new securities from holders of these securities is that portfolios will be more completely mixed, so that the instability caused by individual defaults will be minimized.