Economics of Banking 31.5.2017
**Guidelines for solution**

**Problem 1**
The first part deals with liquidity problems of a bank arising not from withdrawals of deposits but from sudden demands for credit from traditional costumers. The theoretical background can be found in chapter 14 on liquidity and the interbank market. The introduction of a credit line reestablishes the situation before the financial crisis of 2007-8 where banks could obtain short-rate finding in the interbank market in the form of uncovered loans.

This arrangement solves the immediate problem but creates others, mainly connected with the default risk on this type of loans, since the underlying liquidity needs of the borrowing banks may be connected with engagements of low quality, so that other banks may be increasingly reluctant to accept uncovered lones, effectively reducing the extent of the credit line to zero, corresponding to the drying out of the interbank market during the crisis.

**Problem 2**
The theoretical background is chapter 5 on the loan contract. Since the securities bought are deposited with the bank, the lender has full information about the outcome of the investment, and consequently the optimal loan contract should be one of risk sharing. If the borrowers are more risk averse than the bank, which seems to be the case here, the traditional arrangement, which leaves all gains over a fixed payment to the borrower, is not the optimal one, where the bank should take more of the risk against a fixed payment to the borrower. In the limiting case of a very risk averse costumer, the contract should take the form of a long-term deposit contract with an interest rate higher than the standard rate.

The new type of loan contracts, where the bank does not fully control the portfolio, will be subject to the problems of asymmetric information, and it should be set up with this in mind. The most likely arrangement would be the standard contract, where the bank demands a fixed repayment and inspects the portfolio and its management if the borrower is unable to pay this amount. In the case that the skills and effort of the borrower matters for the outcome one might use the special contract for cases of moral hazard.

**Problem 3**
We have here a problem of asset management and interest rate risk as discussed in chapter 3. It is indicated that the interest rate is not expected to be subject to large changess, but that it is important that net present value of obligations balances the net present value of liabilities. The standard tool for achieving this balance is duration matching, and this concept should be briefly explained.

If future exchange rate shifts are large, then duration matching, which rely on linear approximation, does not fully capture the changes in net present value of the portfolio. A first step would be to include higher order approximation, but this is not a fully satisfactory solution and should be supplemented by other methods such as scenario analyses.