

Monetary Economics: The Economics of Banking

Exam 4. January 2009

Outline of Solution

1. The problem is related to Asset and Liability Management, more specifically it is about measuring the degree of agreement in maturity between assets and liabilities. The relevant measure, called *duration*, is described in the lecture notes chapter 5. Duration is defined as a weighted average of the maturities of the individual assets (or liabilities), and the measure can be used as a first and simple method to achieve a desired agreement of asset and liability maturities, namely through duration matching.

Since the duration measure is a first order approximation to the sensitivity of net present value to interest rate changes, it may lack precision, something which may be remedied to some extent by adding the second order term in the approximation, called the *convexity*. For large displacements of the interest rate structure an analysis based on duration will be insufficient.

2. We are dealing with a problem of credit rationing, described in Freixas & Rochet chapter 5. The basic explanation here is that the supply of credit becomes backward-bended, even though the supply may be increasing in the expected interest payment to the bank, since the expected interest payment may be a decreasing function of the nominal interest rate, at least for high values of the latter. A functional dependence of this type can be explained in several ways, but the situation described points to *adverse selection* (the Stiglitz-Weiss model), where it is assumed that there is a positive relation between average outcome and risk of the investments which may be financed by the bank. This relation has as its consequence that credit financed investments are not carried out unless their average outcome, and thereby their risk, does not exceed a certain level, meaning that the investments realized all have a rather sizeable risk, whereby the average payment to the bank is reduced as compared to the nominal payments in the contract. The observed high number of defaults point in this direction.

Classical methods of solving this kind of problems will be either be directed against the the causes (asymmetric information), where better information about investment projects available, or other types of loan contract than the standard contract, may improve credit conditions, or against the result (rationing) by public support to credit for certain types of investment projects.

3. The obvious candidate for a model of the situation described is the Salop model for a circular city, where it is assumed to be so easy to establish new banks that the profit (net of fixed costs) is zero in equilibrium. In this case the market will lead to overestablishment as compared to the socially optimal situation.

The further discussion pertains to the effect of deposit rate restriction in the form of an upper bound for interest rate offered to depositors. Under normal circumstances the deposit and loan business of banks will be mutually independent, and the deposit rate will

not immediately lead to lower loan rates as intended by this policy measure. If however it is allowed that banks demand from their costumers to collect all their deposits and loans in the same bank, then deposit rate restriction will have the desired effect, showing that methods which are generally frowned upon as restricting competition may have a positive social effect.