Lecture 6:
The loan contract, continued
Credit rationing

After a few initial comments on the moral hazard model we turn to collaterals.

A collateral is an asset which will be left to the disposal of the lender in the case that the borrower doesn't fulfil the engagement. It provides us with an additional tool for creating efficient loan contracts under asymmetric information.

We consider a model with two types of borrowers, namely (1) good investors having a high probability of success even when doing very little, and (2) bad investors who will have a small probability of success unless they put up considerable effort. *Types are observable* to the lender, what is hidden is their subsequent effort on the project. We assume that parameters are such that it is optimal for society that good investors use low effort and bad investors use high. This is however not supported by a simple system of contracts with using only repayment. Not very surprising given the context we find that collateral can solve the problem. Since the good investor should choose low effort anyway, there is no need for collateral here. But the bad investor must post a collateral, since – combined with a suitably low repayment rate – this will induce the choice of high effort, the investor is hurt now by loss of the collateral in the case of failure, and this will align the private assessment with that of society. You don't need to work through the computation of collateral and repayment in this case, but it is useful to have a close look at the result to see exactly how it improves the incentives.

The final section in this chapter is not part of our curriculum. However, the model is nice, so here is a brief outline which may be skipped at will:

The model considered, which deals with the phenomenon of *microfinance,* is due to Stiglitz, who at that time held a position in the World Bank. Microfinance was a very popular topic in the beginning of the 00es, and the founder of one of these banks, offering small-scale loans to communities in developing countries and having a fine record of repayments of debts, was awarded the Nobel Peace Prize. Over the years, the initial enthusiasm has faded somewhat, microfinance did not turn out to be the solution to the problems of economic under-development. But the idea of using joint responsibility for debt is certainly interesting.

The model (for which, by the way, you will not be held responsible at exam), uses the by now wellknown moral hazard model with two different investment technologies G and B, now extended slightly since the technologies can be applied on smaller or larger scale depending on an input variable L. As always, too high repayment rates will lead to B being chosen, due to the presence of L the border between G and B becomes slightly more complicated.

Having done with Chapter 5, we move to the next chapter dealing with the credit rationing problem. Formulated in a simplistic way, the problem arises when looking at the credit market, which according to our textbook knowledge of economics should be balanced by the price mechanism, that is by the interest rate, or as we put it, the repayment rate. But it is wellknown that there are numerous cases where borrowers agree to pay a very high interest rate but still cannot get a loan, and why can it be so?

Basically, we know very well that exactly those borrowers agreeing to pay whatever we demand are those that we should avoid in any case since we would probably never see any repayment. The reason why we use some time on the problem is that we get several useful byproducts, as we shall see in the following lectures.

Assuming normal supply and demand functions for loans as depending on the repayment rate, we would expect that equilibrium should occur at some suitable repayment rate. Since this does not happen, either demand or supply must be out of the normal, and we take a closer look at the supply.

An obvious way of introducing disequilibrium is assuming that supply is backward-bended. But this immediately leads us to the question of what makes supply look this way, at again a straightforward explanation would be that supply is increasing as a function of *expected repayment*, but expected payment depends on *nominal repayment* in a less simple way, decreasing when nominal repayment becomes sufficiently large.

We must then search for an explanation of backward-bended relationship between nominal and expected repayment, we go on with the models, namely

(1) adverse selection (the Stiglitz-Weiss model),

(2) costly monitoring,

(3) moral hazard.

Each of the three give the explanation we are looking for, and there may be others as well. If time permits, we begin with the detailed discussion, starting from below. Anyway, probably we do not get very far into this.

We read:

Chapter 5, Section 4. Chapter 6, Sections 1 and 2.1.