Lecture 17:
Closing the bank

By now we have dealt with troubled banks and discussed ways to avoid that trouble ever arises. Unfortunately, trouble may arise anyway, perhaps due to mismanagement, perhaps not, and the question is what should be done when this happens.

Chapter 17 deals with these problems, and in several steps, taking into account that banks may be closed or reorganized either by themselves, that is by the shareholders, or by other institutions, basically those which we have already seen. The first line of regulation would be the owners of the bank, and Section 17.2 deals with this situation using the Dewatripont-Tirole model. Basically this is an example of academic recycling – the model deals more with manager incentives than with banking theory, but nevertheless it touches upon a crucial detail, namely the problem of *signals* and how to act on them. We assume (reasonably enough) that the day-to-day business of a bank is conducted not by its owners (shareholders) but by a manager, and if there is a sign of troubles, then it might be appropriate to sack the manager and reorganize the bank.

But how can the shareholders know whether the bank is just experiencing some short-term difficulties or whether it is in really bad shape? In the model, there are two signals which can be used: one of them, v reports on previous results, whereas the other one, u, is a signal about future results. Economists know that past performance is irrelevant for future payoffs, so one should expect that only u matters, and indeed this is what the owners would have done if they were in charge themselves, there would be a break-even value $\hat{u}$ of the signal so that the bank would be closed/reorganized if u is below this value, and continued if above. You may safely skip the derivation of this result on p.329, unless you should find integration by parts intellectually stimulating, anyway the result so far is pretty obvious.

However, the presence of a manager and the use of an incentive scheme for this manager blurs the issue.The incentive scheme for the manager is a bonus which will be lost if fired. The owners have only the option of sacking the manager (reorganizing) or keeping her. This action is formulated as a probability of keeping the manager given the signals u and v – one should not be frightened by this, it is basically a simple way of formulating the decision rule, and the optimal decision is always either 0 or 1, there is no need for a probabilistic decision.

Now the optimal decision rule is the one which maximizes expected profits given that the manager should prefer to use maximal effort in running the bank. This

maximization problem looks formidable, but it turns out to have a rather simple solution (it is linear in the decision variable, so this decision is either as large (1) or as small (0) as possible). Assuming that the signals are influenced in the right way by management effort, one gets the result that the optimal decision depends on both u and v (contrary to orthodox economic thinking), and that there are cases where u is below the threshold but the bank is allowed to carry on since v is large, indicating that the manager does a fine job and may be able to turn the not so bright prospects into a reasonable business.

The next model considered is the Repullo model, which considers the question of who should be given the authority to decide whether a bank should be assisted or closed. The model is very simple, so there should be no problems in following the formalism. Notice that we have again two signals v og u, with the difference that v is observable to all relevant parties (here it is the liquidity need of the bank) whereas u is of more subjective nature (so that one cannot make an automatic rule which takes action given some value of u). Since u is relevant, one has to decide which institution should take action upon observing u. Thus, the model deals with placing the authority to close the bank.

The main message of the model is that the central bank and the deposit insurer will have different viewpoints on whether a bank should be closed or allowed to go on. What matters here is the cost to the institution of either supporting the bank (in particular for the central bank which will be subject to some risk). As a consequence, the way in which they would regulate is not the same, and it may be better for society to delegate the competence to one of the two in a way that depends on signals received rather than once and for all. The particular perspective which makes it interesting is that one has to use a signal which is observable and contractable (here v) in the sense that it can be use for legally binding decisions, whereas the signals that really matter may not have the latter property.

Section 17.4 with the simple model due Mailath and Mester illustrates the point that it may not be so easy to close a bank even when it objectively acts in a way which makes it possible for the relevant authority (here the central bank) to step in – it may be cheaper for the authority to let it go on than closing it down right away. The model uses a simple extensive form game over two periods where the bank chooses either a safe or a risky investment (if it has not been closed after the first choice), and the regulator has the option of closing the bank after its first choice. Banks prefer risky investments to safe investments but cannot always get away with it.

Once payoffs have been assigned to terminal nodes of the tree, the rest is a simple check of equilibria. It is seen that there are only few cases (depending on parameter value) where the bank will actually be closed down. In all the other cases the bank is allowed to proceed, since this is the cheaper option for the regulator having to reimburse depositors and to pay the liquidation cost. It gives an explanation of

a reluctance to take action against banks with an overly risky investment policy, something which has been observed in many cases.

In the models of considered so far, it turned out that in many situations where a bank should have been closed, it is nevertheless allowed to carry on. This happened due to the cost connected with closing a bank. But there is another – and much more straightforward – reason that banks are assisted when they get into trouble, namely the consequences of a bank failure for the economic activity in society in general. If the bank has a sufficiently large impact upon the economy, it cannot be allowed to close down. It is *systemically important,* in more plain language *too big to fail,* and if the bank knows this to be the case, it opens up new possibilities for risk-taking.

The Acharya-Yorulmazor model of Section 5 resembles a model (perhaps not quite as 'simple' as promised in the book) that we have considered earlier in the context of deposit insurance: Banks may or may not choose correlated investments, and the regulator may or may not assist them in the case of trouble. However, the choices of the banks depend on the fact that they may be bailed out, so the resulting equilibrium may be one where banks are assisted more often than what is desirable for society. When coordinating investments, the banks become *systemically important.* The message of the model is relevant, but the details are not, so we treat it only superficially.

The problem of SIFIs (systemically important financial institutions) is important in practice, so that it has been taken up both by Basel and by national regulations. It is however not quite easy to measure systemically importance, and to some extent it is not even clear what is meant by it. The final part of Section 17.5 is an attempt to measure the systemic influence of a bank, something which is not as straightforward as one might think. Here – and in most of theoretical models about systemic importance – the problem is reduced a problem of correlation of assets, perhaps not exactly what one wants to capture by the idea of systemic importance.

I have added a note to the homepage which approaches the SIFI problem from another angle, using the analysis of payments which was mentioned back in Lecture 10. Defaulting banks fail to make the payments that was agreed upon, and this has repercussions on the whole system. The model shows how these repercussions and the systemic impact can be quantified given the initial state.

We read: Chapter 17.