

## Lecture 19: Closing the Bank II, Capital regulation

In the models of Chapter 17 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.

Section 17.5 deals with such problems.

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 I mentioned way back in Chapter 10 (we skipped it there, and actually the present story can be understood without turning back to the first one). 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.

This takes us to the final Chapter 18 on capital regulation and the Basel rules. Capital regulation has been with us almost from Chapter 1, so by now there can be

few surprises. The idea that bank owners (shareholders) should participate in the risks taken by the bank instead of risking only borrowed money is so intuitive that it seems to need no explanation. However, looking at the matter from a theoretical angle, things become more complicated, so that the common sense which is good and useful may not always give the correct answer.

In the model of Allen, Carletti and Marquez, the unregulated bank will by itself choose a higher capital ratio than if it were regulated. This is a surprising conclusion, and one would suspect that the model has some rather peculiar features, as indeed it has. In the beginning all is quite standard, the bank chooses both its capital ratio and the risk level of its investment, and it is disciplined by the depositors since the deposit rate depends on the risk. But on the loan side things are slightly unusual, either the bank is owned by the borrowers or there is strong competition for borrowers, in any case the bank chooses the loan rate (and risk level) so as to maximize borrower profits. This determines an equilibrium capital ratio without any need for a regulator.

When the regulator steps in, the capital ration will be determined from social welfare considerations, in the primitive setup of the model this means that it should maximize borrower profits *plus* bank profits, and for suitable parameter values this optimal capital ratio may be *lower* than the ratio found in the equilibrium without a regulator. This looks of course rather strange, it happened since the regulator forced the bank to pay more attention to its own profits than it would have done in the market (where it was subject to strong competition for borrowers).

Notice, by the way, that in the model we have introduced a *cost of equity* to the bank, presumably some kind of opportunity cost, reflecting what the shareholders could have obtained elsewhere, and in most cases this cost is assumed to be higher than the cost of borrowed funds. This gives rise to some trouble with the Modigliani-Miller theorem saying that the value of the firm is independent of the proportion of equity in total capital, but again this probably corresponds to intuition and practical reasoning.

**We read:** Chapter 17, section 5, and Chapter 18, section 1.