Lecture 13:
Irregularities II; Bank Runs and Interbank Market

We didn't cover the hidden-option-story in the last lecture, so we begin with it and then turn to the program of this lecture:

Section 12.3.3 on "evergreening" explains why banks may want to keep bad and nonperforming loans in their portfolio. This is a nice, but somewhat tricky story, and it should be read selectively. The point of this story is that due to capital regulation, there may be cases where a bank is technically insolvent and therefore should close down, but where it can manage to get on if it can hide the losses (and the reductions in equity caused by the losses). So it is a story which points in several directions – not only can banks circumvent the regulations, but it may happen that circumventing the regulations can be profitable to the banks.

Don't waste much time on the description of the different investment possibilities, for our purpose it is enough to know that there are both long and short investments, and that the public (including the financial authorities who cannot possibly know all details) cannot see whether the engagements of the bank are long or short, som that absence of profits one year may be due to the longsightedness of the investments rather than to losses.

Money laundering is a very important theme when dealing with the regulation of banks, and attracts much public interest. We treat only superficially, which may be surprising since it fills so much in the debate, but economic theory has little to say about it. This is seen from the initial sections which are more picturesque than important. The exception is the story in 12.4.3. Since neither this nor the other parts of 12.4 are in the curriculum, it is up to you whether to read it or skip it. But I suggest that you have a brief look (without going into the formal details) at the crying wolf model:

> Suppose that banks have an obligation to report on money laundering transactions to the authorities. They have some but limited possibilities of detecting this, in the model taking the form of receiving a signal that it occurs, a signal which is often right but may be wrong. The decision of the bank is a decision of how to report given the signal received. It is assumed that the authorities can verify whether or not the reported case is money laundering, but this is costly to society. The bank is fined heavily if it fails to report money laundering.
>
> This is a standard game-theoretical problem (a signalling game), and depending on parameter values, it may have equilibria which give rise to the right amount of reporting, or there may be excessive reporting in equilibrium, so that the bank reports money laundering also when the signal says that no laundering occurs, resulting in an overall loss in verification costs to society. This is the classical outcome in cases where there has been a public outcry, the resulting measures leads to considerable inconvenience to citizens which were in no way involved in the problem.

Having considered (minor) irregularities in the previous lecture, we now move to major troubles in Chapter 14 dealing with liquidity problems and bank runs. Here we use the Diamond-Dybvig model which was set up with the specific purpose of studying bank runs.

As we saw earlier, fractional banking works fine under normal conditions, but if for some reason, the patient depositors at date 1 doubt whether the bank will pay them at date 2, then they will show up pretending to be impatient. The bank has only money to pay the truly impatient, so it will default.

Bank runs caused by subjective panics have occurred for centuries, and several ways of avoiding them have been proposed. We discuss a few: *Suspending payments* will work fine in our model, but how can we know whether the fraction π is the right one? Similarly the idea of *transforming deposits to equity* is nice but not really a solution: we again need to know π in order to get the perfect substitute, and on our way to improve fractional banking we have done away with it, moving towards a primitive form of shadow banking.

The idea behind *narrow banking* as outlined in Section 14.2 appears as very unreasonable, but this is partly due to the very simplicity of the formulation of the proposals of narrow banking. What is proposed is rather a separation of financial intermediation, so that some banks take deposits but invest only in very liquid securities, whereas other banks are engaged in risky lending but are funded in other ways. The old ideas of narrow banking are slowly filtering into the way in which the financial sector is being reformed or perhaps into which it transforms itself, with shadow banking taking over some of the functions of the risky loan business.

We proceed in Section 3 with a short treatment of *liquidity risk,* discussing a model for the determination of the optimal liquidity reserve in a bank (notice that the liquidity reserve is another concept than the capital ratio, the latter deals with equity, but a bank can have a large fraction of equity but no liquidity reserve – as well as having liquidity but very small fraction of equity). The model uses a classical model from operations research, read the first page and skip the rest. The regulation of liquidity came with Basel III and falls somewhat outside the standard forms of regulation.

The story now goes on with the Bhattarachya-Gale model of the interbank market. Before the 2007-8 crisis there was a very active interbank market where banks could borrow and lend at short notice and without any form for collateral. This was largely spoiled by the bank defaults taking place during the crises, the interbank market still exists but the former days did not return, loans are usually given against collateral and turnover is smaller.

The formal model looks much more impressive than it is. Basically there are several Diamond-Dybvig banks, each having their own characteristic parameter π, the fraction of impatient depositors. Feel free to skip the tedious details, in particular

the computation of the interbank repayment rate, this is not too important anyway.

We read: Chapter 12 sections 1 and 2, subsection 12.3.3-4, Chapter 14 sections 1-4.