Lecture 1: Why Banks?

The present overview of the lecture is the first of a series of similar short handouts which can be downloaded from the course homepage at

`https://web.econ.ku.dk/keiding/underv/bank`,

where they will appear a few days before the lecture.

As outlined in the teaching plan (see the course homepage and have a look at it from time to another, the plan may be subject to some minor changes as we proceed), we work ourselves through Chapter 1 of the book (we skip Section 5) in the course of this week, where we have lectures both monday and thursday. Usually, first lectures contain introductory bla-bla which can be passed over quickly, but in our case it so happens that the first topics to be dealt with are important and will be re-used repeatedly as we proceed, so it is a good idea to get a grasp of what is going on.

As it can be seen from the teaching plan, we shall deal with two distinct – but of course related – topics in the course of the semester, namely

- Microeconomics of banking,
- Risk management in banks.

We shall proceed with the two topics in a somewhat parallel way, starting with the microeconomics part (which by the way is also the largest) and then introducing risk management in Lecture 3. So for the moment, we take the outsider's viewpoint, trying to explain what is actually going on in the financial sector.

We begin with the typical academic question: Why are there banks? According to the standard way of understanding the functioning of an economy (general equilibrium theory) there is no need for banks! The story comes in the introduction to Chapter 1, and (as with most of what we shall be doing) it is simpler than it looks: We consider an economy over two periods (otherwise there would be mo reason for savings and investment) which is as simple as possible, with only one consumption good in each period, and only one consumer, one producer, and a bank. There is no need for making it more complicated since the point can be made even here.

Consumers, producers can use the bank for savings or for borrowing funds, but they can also use a simple money market – buying or writing claims to be paid in the next period. Checking the details it can be seen that the deposit rate and the loan rate must equal the bond rate, so profits are 0 and the bank just mimics the bond market and can just as well be left out.

What this shows is that there are some phenomena left out in our model, which explains that banks are there and earn money. The most obvious of these phenomena is *asymmetric information* in some form. We therefore consider four possible explanations, which all consist of thee parts, namely

(i) an outline of the special type of business considered,

(ii) an explanation of why the ordinary money market cannot cope with the situation, at least not in a satisfactory way,

(iii) a demonstration that a suitably designed financial intermediary can improve on the situation.

We treat the first one right away, leaving the three others to the next lecture.

The first one treated is that of *liquidity insurance,* where we present the almost-classical Diamond-Dybvig model. It was conceived as a background for explaining bank panics, at present we use the model only to show how the fundamental business model of banking (taking deposits at a low rate, lending out at a high rate) can be given a rational foundation.

In the model, we have potential investors (many of them) who are all identical, having one unit of money which can be invested to give an outcome $R > 1$ after two periods. They are however subject to a liquidity shock after 1 period, this happens independently and with probability π for each individual. If they want back their investment at this early stage, they get only $L < 1$.

With no intercourse between individuals, each investor must choose the amount I to invest, leaving the rest for the case where liquidity is needed. This is not a very smart solution, it can be improved if the people hit by a liquidity shock sell their investments (titles to outcome at date 2) to those not hit by a liquidity shock. It can easily be argued that the price must be $1/R$, and with this price investors will get 1 if impatient and e R if they turn out to be patient.

However, this is not the best possible solution: If the investors make a joint decision on the amount to be invested, then the community can reimburse the impatient (which amount to the share π of all investors by the law of large numbers) with what was not invested and pay the remaining fraction of investors the outcome of what was invested. We may implement this arrangement by collecting all the money of the investor as a deposit in a "bank" which then is contractually obliged to pay out the reimbursement to the impatient (and this turns out to be > 1), as well as the investment outcome (which now is somewhat smaller than R) to the patient investors. Since investors are assumed to be risk averse, they are happy with this contract, it is better than what they could get using the market.

The optimal contract is such that impatient get slightly less than patient investors, so there there is no need for bureaucratic documentation of liquidity needs, you just say that you want your money, and then you get it.

Running a little ahead of our story: this may fail if we introduce beliefs which so far played no role. Suppose that for some reason, the patient investors are afraid at date 1 that they would not get their money at date 2. Then they would accept the smaller amount designated for impatient investors rather than getting nothing, so they show up as impatient. The bank cannot pay all its investors, so it goes bankrupt (and it turns out the pessimistic patient investors were right). This is how a bank run may evolve, and we return to it in Chapter 14.

We read: Chapter 1, Sections 1 – 3.

There is a number of *exercises* in the book at the end of each chapter, some suggestions to their answers can be found on the course homepage. They are not necessarily of the same type as the questions which will occur at the exam (we shall return to this on several occasions, so don't worry now), and you may consider these exercises as a support for your reading of the text – or you may skip them altogether.