Lecture 9:
Securitization and shadow banking

We began the discussion of securitization last week, and now we move on putting securitization into the broader framework of shadow banking. We replace Section 3 of the book by a note (see the course homepage) on a somewhat newer model due to Plantin which (on the homepage) shows how shadow banking to a large extent arises because of the constraints which capital regulation puts on traditional banking. The Plantin model sets up a simple economy with one consumer, one producer, one bank and one additional financial intermediary, here a trust fund. It is seen that shadow banking will occur when it gives the banks additional possibilities of profitable business, and that capital regulation matters both for welfare in general and the emergence of shadow banking.

We skip the next Section (4) but here is a very brief comment on its topic: It addresses a problem which was much debated following the financial crises 2007-8. Ratings agencies are an important ingredient in the securitization process, and their performance up to the financial crisis was far from impressive, since they kept rating securities as AAA before they turned out to be junk. The services of the rating agency are usually paid by the issuer of the securities, and this gives rise to some doubts about their sincerity. Explaining the overrating is not altogether easy, and their are several possible approaches to this. We skip the section since by now it has mainly historical interest.

Section 5 in Chapter 8 deals with the by now almost classical model by Kiyotaki and Moore, which shows that there is a built-in tendency to economic instability in the workings of the financial sector. We consider a dynamical model with one good ("consumption") in each period. There an asset ("land") which can in production together with the consumption good as input for producing consumption good in the next period (k units of land and 1 unit of the good yields y units of the good – assume that $k < 1$). Land not used for production can be rented out.

The financial sector enters since entrepreneurs (landowners) need the consumption good for production, and so they borrow in the banks. They need full collateral for the loan, and the amount depends on the expected value of the land when the loan is paid back. Land not used in production is rented out, the rent is assumed to determined by a standard (linear) demand curve.

The model is simple once you follow these ideas, and it is given on the first half of p.166. The equation (16) expresses that selling a piece of land right away should

give the same as keeping it and using it for production and renting. This gives us today's price as a second degree polynomium in next period's price, with a graph as in Fig.8.3. Check that it results in two-period cyclical movements in equilibrium prices of land, so one gets a simple explanation of the movements in the housing market leading up to 2007-8 with the subsequent downturn (and the beginning of a similar development over the last years).

The model in Section 6 deals with *leverage.* The morale (which we have seen several times already) is that excessive borrowing has consequences for the stability of financial markets. The present version differs somewhat from what we have seen and will see, since all probabilities are subjective (they are beliefs): There is a given asset which may have payment 1 or it may have payment 1/4, and there are no objective probabilities of these outcomes, everything depends on the beliefs. In the model, these beliefs are very widely dispersed.

You don't need to follow every detail, but check your understanding of the model by reading Subsection 8.6.1. So far, it is only about trading, optimistic agents buy the security from pessimistic agents, and demand = supply determines its price.

In the next subsection, we add the possibility that optimists can borrow money to buy even more securities. Since the lenders are pessimists, they want full collateral in the worst case (this means that you need 4 securities to guarantee a loan of 1). Now the equilibrium is changed, there is a new (higher) price on securities, and we have introduced leverage, holding of assets for borrowed money.

In the third section, look at the figure and skip details: We have added one period, where we branch so that either the security will always yield 1, or it will be of the type just considered. It is shown (and you need not follow the details) that the leverage is mush higher at $t = 0$ than at $t = 1$ – when moving from $t = 0$ to $t = 1$, where next to nothing happens, a large number of agents will be bankrupt if we go to D (the lower branch in the figure), even though the security may still come out with 1, namely agents who have borrowed to buy the security. And all this happens in well-functioning markets without any external disturbances, just as a part of the normal workings of the markets.

We read: Note on shadow banking (homepage), Chapter 8, sections 5 and 6 (section 6 only in outline).